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Is Recovery from Schizophrenia a Privilege? The Relationship Between Socioeconomic Status, Race and Remission from Serious Mental Illness

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Is Recovery from Schizophrenia a Privilege?

The Relationship Between Socioeconomic Status, Race and Remission from Serious Mental Illness

A dissertation submitted in partial satisfaction of the requirements for the degree of

Doctor of Philosophy in Social Welfare

by

Nikki Elyce Hozack

2020

ABSTRACT OF THE DISSERTATION

Is Recovery from Schizophrenia a Privilege?

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by

Nikki Elyce Hozack

Doctor of Philosophy in Social Welfare

University of California, Los Angeles, 2020

Professor David Cohen, Chair

Despite growing recognition that some people may recover from schizophrenia and other psychoses, potential social determinants of recovery remain largely unexplored. There is some evidence that psychological well-being, quality of life and educational and occupational outcomes are impacted by race, childhood socioeconomic status, and current poverty, but no evidence exists as to how the interaction of these variables might impact the recovery efforts of people with psychotic disorder over time. This study looks at the impact of privilege (conceptualized as race, childhood socioeconomic status and current poverty) on outcomes related to recovery: remission, quality of life, clinical global functioning, and educational and

occupational status. The analysis was conducted using data from the Recovery After an Initial Schizophrenia Episode (RAISE) study. A total of 404 subjects who were experiencing first episode psychosis were enrolled in the study, across 34 sites in the U.S. Latent class analysis established the three privilege groups, higher, middle and lower, and multilevel modeling was used to evaluate the differences between the three privilege groups on the outcome variables.

Results indicated that the higher privilege group had significantly better quality of life and clinical global functioning than did the other two groups, with and without covariates. However, there were no significant difference between the middle and lower privilege groups once the covariates were added. Though the higher privilege group had distinctly higher rates of remission throughout all RAISE assessments, the differences were not statistically significant. The results indicated that the covariates, diagnosis, treatment type and marital status, also significantly impacted outcomes.

Due to large amounts of missing data and unequal attrition among privilege groups, these results may be considered hypothesis-generating only. The results remain important, however, as this is the only study that is looking at the effects of privilege on recovery outcomes in people with schizophrenia and as such the need for further research exploring this relationship is warranted. This may help us better understand the social determinants related to recovery in psychosis and find specific areas, in which treatment can be improved, including directly addressing potential issues with race and economic distress.

The dissertation of Nikki Elyce Hozack is approved.

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To my beloved Grammy Sabo – she was the first person I told when I first contemplated getting my PhD and her support was unwavering until she died a short while into my program.

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I love and miss you always.

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CHAPTER 1
INTRODUCTION

There are inspiring stories of mental health recovery, both in the media and in the research literature. People who have been diagnosed with schizophrenia and other serious mental disorders that may be "death sentences" for a normal life, return from the depths of their madness, healthy and whole, and go on to realize their dreams. Sometimes, recovery is even accompanied by more extraordinary successes. Two such examples are John Nash, diagnosed with schizophrenia, who went on to win the Nobel Prize and was the subject matter of the popular movie *A Beautiful Mind* (Howard, 2001), and Ellen Saks, also diagnosed and hospitalized with schizophrenia, now a distinguished professor at the University of Southern California and the author of a best-selling book that chronicles her journey (Saks, 2007). Smaller but no less inspiring personal stories can also be found in online recovery websites or in the recovery literature (Time to Change, 2018; Successful Schizophrenia, 2009; Internet Mental Health, 2011). Many individuals have recovered from the devastating effects of mental disorder and the resulting psychiatric treatments[1], and are now helping others as academics, therapists, counselors, and advocates, or have become valued and productive members of their families and communities (Cohen, 2005; Kottsieper, 2009).

These are inspiring stories of courage and love. Yet, if one looks closely, another common thread seems to run through the narratives—one of privilege. Most of the stories of recovery that can be accessed in books, articles, the internet and even the academic literature, are primarily written by or about people who had access to external resources that facilitated their

[1] Psychiatric treatment, including the use of antipsychotics, is viewed by many former patients as ineffective at best and "inhumane, degrading and judgmental" at its worst (Unzicker, 1989, p. 71).

journeys, often though family and friends. Indeed, many speak of being able to stay with an understanding parent or friend, having a circle of social support, going back to school to obtain or finish a degree, obtaining employment in a supportive environment, or having access to intensive and long-term therapy. Even if hope for it was lost, knowledge of a "good life" was oft times already established. Many had a tangible "something" to remember, even in the midst of madness (Breeding & Scogin, 2012; Breeding, 2008; Cohen, 2005; Kottsieper, 2009; Saks, 2007).

A question therefore arises: is it possible to find hope in situations when hope is already hard to come by—when the ability to set goals, let alone meet them, is already limited by a lack of access to resources that allow the possibility of reaching those goals? Can those diagnosed find opportunities for work and social integration in neighborhoods already beleaguered by poverty and crime, or as members of an already marginalized group? When walking to the store is potentially dangerous, how likely would one be to participate in the community or establish new relationships? When access to and affordability of quality health or mental health care is insufficient, is it is it possible to learn to manage one's own care? Is there potential to find new purpose and meaning in one's life when opportunities for growth, including community integration, social opportunities, a good education, or consistent well-paying employment, are scarce?

In a recent sociology reader, editor Michael S. Kimmel introduced the idea of privilege:

> To run or walk into a strong headwind is to understand the power of nature. You set your jaw in a squared grimace, your eyes are slit against the wind, and you breathe with fierce determination. And still you make so little progress.

> To walk or run with that same wind at your back is to float, to sail effortlessly, expending virtually no energy. You do not feel the wind; it feels you. You do not feel how it pushes you along; you feel only the effortlessness of your movements. You feel you could go on forever. Only when you turn around and face that wind do you realize its strength. (Kimmel, 2013, p. 1)

This analogy feels particularly apt when discussing the experience of serious mental illness and the social context in which it takes place. Schizophrenia itself can also be compared to walking into a strong headwind, and it may be individual characteristics related to privilege that buffer that force or turn it into a gale force wind.

The online Oxford Dictionary (n.d.) defines "privilege" as *"A special right, advantage, or immunity granted or available only to a particular person or group of people."* In the United States, those who have the best chance of recovery may also be those that tend to benefit in other social, organizational and economic arenas; educated, middle class (or higher) whites. When discussing the homogenous nature of the recovered participants in his qualitative study, Cohen (2005) states that "having an education, being White, and having an income may have helped these people on their road to recovery, because they were already accepted on some social dimensions" (p. 339). Conversely, those who do not belong to the dominant culture, namely those who are poor and/or members of a minority group, may not have the same level of acceptance and may have a harder time recovering from their adverse experiences.

Evidence suggests that mental health disparities for the poor and racial minorities, especially blacks, are common (Safran et al, 2009). Research in this arena has primarily focused on understanding disparities that take place within the mental health system, including access to

care and differential diagnosis and treatment. Less common are studies that address the larger social context in which these take place. As such, those with schizophrenia who are also socially and economically disadvantaged may be more heavily burdened in terms of course and outcome, not just by the disparities that exist within the mental health system, but by larger inequalities related to lack of privilege. The dynamic interrelationship between disadvantage and mental disorder results in a vicious cycle that is difficult to break and likely represents a significant barrier to the recovery process (Morrow & Weisser, 2012; Perese, 2007; Topor, Ljungqvist, & Strandberg, 2016).

Purpose of Study

When individuals are diagnosed with a psychotic disorder, it often disrupts participation in normal developmental milestones, including school and work, living independently, developing relationships and becoming a part of the community. As such, recovery from mental illness has been traditionally measured not only by symptom abatement, but also by a return to previous levels of functioning (Liberman, Kopelowicz, Ventura, & Gutkind, 2002). It is possible, however, that attainment of these goals in the recovery process is impacted by privilege. As such, the primary purpose of the present study is to explore the relationship between privilege (conceptualized as race, childhood socioeconomic status and current poverty) and measures related to clinical recovery for people with schizophrenia and other psychotic disorders, including remission (not recovery), education and employment status, and quality of life. To answer this overarching question, four hypotheses regarding privilege and recovery outcomes have been developed. The researcher posits that lower levels of privilege will be positively associated with 1) fewer periods of remission 2) lower levels of quality of life 3) lower levels of global functioning and 4) less time spent working or in school.

Implications for Social Work Practice

According to the Social Work Policy Institute (2005), the "deepest roots" of the social work profession are "are entwined with the knot that is poverty." The goals of our profession include alleviating the impact of poverty on people, as well as developing programs and policies to help people into greater economic security. In the literature, the mentally ill are more often delineated by clinical characteristics, than demographic characteristics, including socioeconomic status (SES). Though the relationship between poverty and mental illness has been long recognized, the long-term effects related to poverty, SES, and to a lesser extent, race, are rarely considered in the literature when looking at interventions or approaches to improve recovery outcomes.

Building upon the existing literature, the proposed dissertation hopes to advance the evidence base on the impact of privilege on remission and recovery for people diagnosed with schizophrenia and other psychotic disorders. Despite evidence that shows that poverty, race and mental illness are intertwined, no known study has to date has directly assessed the impact of privilege, operationalized in the present study into the individual components of race, childhood socioeconomic status, and current poverty, on long-term outcomes of remission, clinical global functioning, and quality of life. Thus, in this dissertation I intend to make a unique contribution to the current literatures of social work by generating findings that may be of clinical, practical and intellectual importance.

Background

Privilege and Recovery from Schizophrenia. Wilton (2004) defines poverty as having "insufficient money, goods or means of support" (p. 26). The effects of poverty are far-reaching and potentially harmful (Perese, 2007). For people with schizophrenia, poverty affects all aspects of living, including the ability to meet basic needs, housing, access to care, social

relationships, community integration, family and leisure activities (Wilton, 2004). Poverty can also negatively impact psychological well-being. The development of self-responsibility and hope for a better life and one's sense of self can be negatively impacted by poverty, and it can engender feelings of shame and depression. As such, Perese (2007) argues, poverty represents a major barrier to recovery from serious mental illness.

Characteristics of recovery, such as occupational and educational involvement, symptom abatement, hope, self-identity, personal responsibility, and purpose and meaning (Davidson & Roe, 2007), are also arguably related to privilege. Giving rise to two alternative theories, the literature regarding the relationship between SES or class and mental illness is extensive. It is clear that many who have been diagnosed with a serious mental disorder, such as schizophrenia, are also financially disadvantaged (Scheid & Brown, 2010), though there is still some debate as to whether poverty "causes" mental illness (social causation theory), or mental illness causes poverty (selection and drift theory). Both theories receive support, but social causation more so (Mossakowski, 2014).

Poverty, especially in early childhood, and to lesser degree, racial minority status, are also related to a variety of poor outcomes including poor educational and occupational achievement and limited economic mobility (Duncan, Ziol-Guest, & Kalil, 2010). Completing high school, going to college, and beginning a career represent significant developmental milestones that can be deferred by the development of psychiatric symptoms (Rosenheck et al, 2006), but are also adversely impacted by poverty and one's racial background (Larson, Russ, Crall, & Halfon, 2008; Mistry, Vandewater, Huston, & McLoyd, 2002). As such, it is possible that recovery efforts may not just be hindered by the presence of a psychotic disorder, but instead by the poor educational and occupational opportunities commonly associated with poverty.

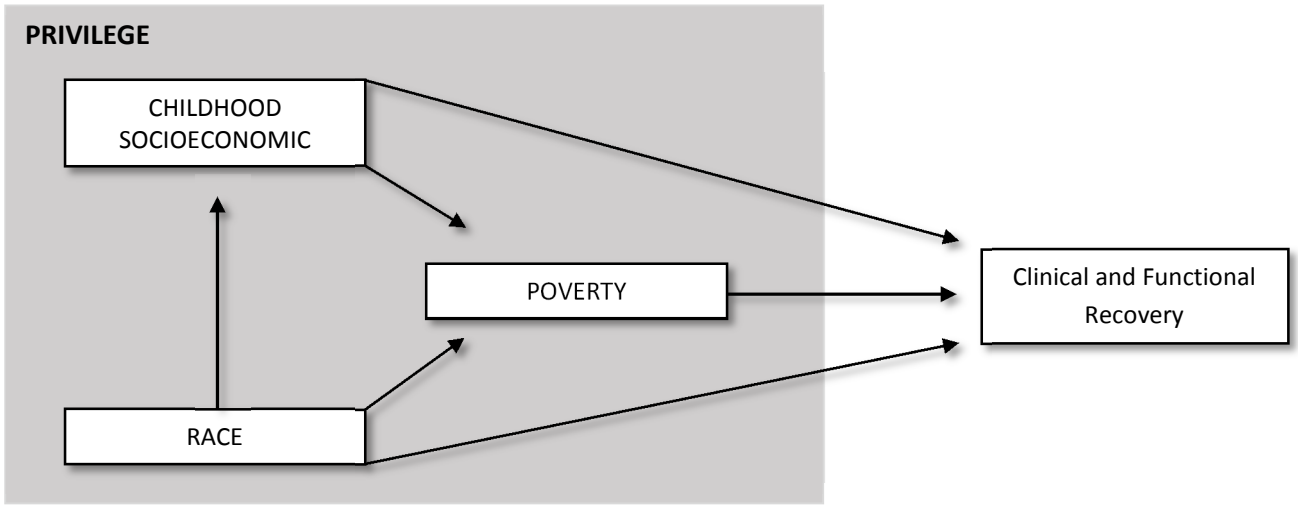
Childhood poverty and other indicators of disadvantage can also adversely alter "lifetime developmental trajectories," resulting in negative socioemotional and cognitive outcomes (Evans & Kim, 2013). Emerging evidence also suggests that the earlier the exposure to and the longer the duration of poverty, the higher the risk of adverse psychological outcomes, including depression and anxiety symptoms that can lead to a psychiatric diagnosis in adulthood (Goosby, 2007; Stansfeld, Clark, Rodgers, Caldwell, & Power, 2011; Yoshikawa, Aber, & Beardslee, 2012).

Mood symptoms, which include feelings of hopelessness and worthlessness, as well as difficulties with motivation, concentration and the ability to make decisions, all related to functional outcomes, are then also affected by poverty (Stansfeld et al, 2011). Avolition, anhedonia, and cognitive difficulty are symptom criteria associated with both depression and schizophrenia, as well as psychiatric medications, including antipsychotics[2] (Harvey, 2011), but the belief that goals can be accomplished, the willingness to try, and the ability to succeed in

[2] Both conventional and alternative perspectives of psychiatry have acknowledged the well-documented negative effects of antipsychotics but have responded in very different ways. In conventional psychiatric treatment, patients who fail to follow the doctor's orders to take their medications are often considered "treatment-non-compliant" and attempts to address the issue tend to emphasize the role of the patient (Gray, Wykes, & Gournay, 2002, p. 278). Lack of insight regarding illness, psychotic pathology, and distrust or poor rapport with the prescribing physician may impact patient's adherence to treatment, and as such, emphasis is placed on interventions intended to change patient behavior, such as psychoeducation, and cognitive and/or behavioral interventions or pharmacological interventions, such as does adjustment, switching medications, treating side effects, simplifying medication regimen, or using long-acting injectable antipsychotics (Gray, Wykes, & Gournay, 2002; Kane, Kishimoto, & Correll, 2013; Oehl, Hummer & Fleischhacker, 2000).
Psychiatric survivors and critics within the field of mental health, on the other hand, have more directly catalogued and described the multiple adverse cognitive, psychological and health side effects of the antipsychotics. Termed "chemical lobotomy" by its critics, the antipsychotic side effect profile includes, but is not limited to flattened affect, loss of motivation and initiative, and a marked indifference to previous distress, all of which work against recovery. Debilitating movement disorders are also a common effect of the drugs and serve to further stigmatize an already vulnerable population (Seeman & Seeman, 2012). Finally, a large portion of patients prescribed antipsychotics develop metabolic and cardiovascular side effects, which can result in a variety of potentially fatal or disabling health conditions (Allison, Mentore, Heo, 1999; Henderson et al, 2005; Koro et al, 2002a, Koro et al, 2002b). More importantly, while the acceptance of antipsychotics as potentially useful vary among critics of the drug, most see the need to significantly stop or decrease clinical use of the drugs and to identify and develop alternative interventions, (Gøtzsche, Young, & Crace, 2015).

those aspirations are also likely related to the social environment in which one was raised. If childhood poverty hinders well-being into adulthood, it is likely that the psychological burden of schizophrenia is also higher for those who grew up in economically disadvantaged situations. It is also plausible that the same mechanisms related to poverty that increase the likelihood of mental disorder also decrease the likelihood of recovery. The proposed relationship between the components of privilege included in the study (race, childhood socioeconomic status and current poverty) can be seen in Figure 1, as well as their impact on clinical and functional recovery efforts.

Figure 1. Relationship Between the Components of Privilege (Race, Childhood socioeconomic status, Current Poverty) and Clinical and Functional Recovery



Recovery and Remission in Schizophrenia. Despite perceptions of poor clinical long-term outcomes, studies have confirmed that people can and do recover from serious mental illness, including schizophrenia and other psychotic disorders, with and without medication. Moreover, many diagnosed with psychotic disorders who do not recover fully experience periods of significant improvement and remission. Estimates of those who have achieved recovery or remission vary in the literature (Bola & Mosher, 2002) likely due to substantive differences in follow-up periods of analysis, patient selection and differences in diagnostic criteria, however, a recent systematic review provides strong evidence that a progressive, deteriorating course is not typical, especially when looking at first episode patients (Lally et al, 2017).

Lally and colleagues (2017) conducted a systematic review and meta-analysis to assess the pooled rate of recovery and remission in first-episode psychosis. Additionally, the researchers looked at specific variables (varying criteria for remission and recovery, length of follow-up, geographic location of study and year studied) to assess their impact on the rates of remission and recovery. The researchers original search yielded 3021 appropriate articles and. 79 articles were included in the final analysis, with a total of 19,072 patients with first-episode psychosis. The mean follow-up period for the remission sample (n= 12, 301) was 5.5 years (25 studies), while the mean follow-up period for recovery (n= 9642) was 7.2 years (35 studies).

Remission was operationalized as a period of improved symptomatic and/or functional improvement and the researchers further delineated the studies as using narrow or broad criteria to define remission. Narrow criteria were those studies that used the criteria developed by the Remission in Schizophrenia Working Group, which includes a substantive reduction in symptoms for a period of 6 months or more. Broad criteria studies were those that assessed symptom reduction but did not include duration. Lally and colleagues (2017) found that the

pooled rate of remission for all studies was 57.9% (P<0001) and this number remained the same after using the trim and fill method to adjust for potential missing studies. When they assessed remission, rates using the narrow criteria developed by the Schizophrenia Working group (25 studies, n = 6909) the rate stayed consistent at 56.9%. The researchers also assessed for the worst-case scenario, in which they assumed that every patient lost to follow-up would not have met criteria for remission or recovery. Even with this strict criterion, the remission rate was 39.3%. Per the researcher's hypothesis, remission rates were higher in studies conducted recently, compared to older studies (p=0.018).

Recovery was operationalized in the meta-analysis as symptomatic and functional recovery in multiple domains for an extended period (Lally et al, 2017). In most studies included in the meta-analysis, recovery was assessed at 2 years, though they included a few with a follow-up at 1 year. The pooled rate of recovery for all studies (35 studies, n = 9,642) was 37.9% (p = 0.006) and no publication bias was found. When the researchers tested the data using the worst-case scenario technique, the pooled rate of recovery was 23.3%. Interestingly, and in keeping with the hypothesis of this study, the data also indicated that white ethnicity moderated higher rates of recovery (p = 0.002), while Asian ethnicity moderated lower rates of recovery (p=0.019) (Lally et al, 2017).

Rates of recovery estimated by Lally and his colleagues (2017) appear valid, as potential problems with methodology have been adequately addressed. The authors acknowledge the high statistical heterogeneity of the studies but followed best practice procedures to confirm that the main results were not influenced by publication bias. To address potential issues with over inflation of remission and recovery rates, the authors also included multiple analyses, providing separate findings for narrow and strict criteria, as well as worst case-scenarios. Limitations that

could not be adequately addressed were also discussed. Due to inadequate data, potential confounders, including treatment issues and co-occurring diagnosis, were not taken into consideration during the analysis and the authors suggested that further research is needed to address this gap. While the data provided information at baseline and the end of the study, there was not enough information available to assess recovery and remission during the follow-up period, though the authors also point of that they were able to assess how duration impacted study follow-up. Finally, the authors suggest that the original articles may have inherent sampling bias related to the severity of illness, those who recovery quickly may have dropped from the studies, while those who are too ill may not be able to consent (Lally et al, 2017).

Analytical Framework and Research Questions

People can and do recover from schizophrenia, with and without treatment. For many, the process of recovery is non-linear and may be experienced in periods of remission rather than continuous and forward movement. The basis of this inquiry, however, hypothesizes that the process of recovery may be negatively or positively impacted by one's level of privilege.

In the absence of a psychiatric diagnosis, current and childhood poverty and race are still related to a variety of negative functional and psychological outcomes, which are themselves also related to recovery. Clinical recovery is reliant on symptom abatement, school or work involvement, independent living and the presence of significant social relationships. Educational attainment is adversely affected by current and early economic deprivation, as well as race, and as such, employment opportunities are also limited. Being poor also decreases the likelihood of independent living, as it increases the receipt of welfare benefits, and being poor as a child only increases the likelihood of welfare dependency. The ability to connect with others and develop or maintain relationships is also affected by poverty; without resources, it is difficult to engage in

social activities. Current and childhood poverty has also been associated with poor psychological functioning, which can affect recovery efforts and negatively impact quality of life.

A diagnosis of mental illness increases the risk for poor functional and psychological outcomes that lead to poverty, but the risk may be even higher for those diagnosed who are already poor and a racial minority. In other words, those diagnosed with schizophrenia who are not privileged may be poorer and sicker, and as such, may be much less likely to obtain achieve symptom abatement, procure stable employment, live independently, or successfully integrate into the community as adults diagnosed with a mental illness. Accordingly, it is possible that recovery efforts would be hampered by poverty and racial inequality.

Research Questions. The literature regarding mental illness and childhood poverty is extensive, but is primarily focused on economic deprivation as a factor in the development of mental disorder (Wilton, 2004). Despite searching extensively, no empirical study that linked childhood poverty or SES to the course and outcome of mental disorders, nor to recovery from mental disorders was found. Current poverty, on the other hand, though not studied extensively, has been identified as a roadblock to recovery, and evidence points to a variety of negative functional and psychosocial outcomes (Cohen, 1993; Perese, 2007). Like poverty, white race, another facet of privilege, has also been studied as a predictor of mental illness, as higher rates of disorder have been found in certain minority groups, though often the results are confounded by socioeconomic or other demographic characteristics. Additionally, race has been studied most frequently in terms of mental health statues and treatment, disparities, cultural stigma and competence, and treatment considerations (Young, Niv, Cohen, Kessler, & McNagny, 2008). In other words, though many of these studies examine potential racial bias, they focus on the racial disparities that impact current diagnosis and treatment, as opposed to the effects that growing up

as a racial minority might have on future functional and psychological outcomes. Poverty and race are known to affect functional outcomes for those with and without mental illness, however, it is likely that those who lack privilege are at a greater disadvantage than those who are privileged in terms of overall outcomes. As such, there is a need to better understand how privilege impacts recovery efforts.

To this end, this study asks:

- *What are the effects of privilege (conceptualized as race, childhood socioeconomic status, and current poverty) on the recovery process for people with schizophrenia and other psychotic disorders?*

Within this overarching question, the researcher attempts to answer the following sub-questions:

1) *Are lower levels of privilege positively associated with fewer time points in clinical remission over a two-year period, controlling for socio-clinical variables?*
2) *Are lower levels of privilege positively associated with lower levels of quality of life over a two-year period among people with schizophrenia and other psychotic disorders, controlling for socio-clinical factors?*
3) *Are lower levels of privilege positively associated with lower levels of clinical global functioning over a two-year period among people with schizophrenia and other psychotic disorders, controlling for socio-clinical factors?*
4) *Are lower levels of privilege positively associated with a shorter duration of occupational or educational involvement over a two-year period, among people with schizophrenia and other psychotic disorders, controlling for socio-clinical factors?*

CHAPTER 2
LITERATURE REVIEW

The following review of the literature begins with the conceptual definitions of the primary study variables, privilege and recovery, then explores the intersection between those variables. To do so, the discussion first focuses on the relationship between poverty and a diagnosis of schizophrenia, then it explores the literature regarding the impact of serious mental illness on functional outcomes related to recovery, such as educational obtainment, employment and quality of life. The impact of privilege (race, childhood SES, poverty) on psychological and functional outcomes is examined next and to highlight the difficulty of obtaining recovery for those without privilege, the discussion will focus on the same areas impacted by serious mental illness; educational attainment, employment and quality of life. Finally, I include a brief discussion of the possible unintended outcomes of the current "recovery orientation" movement on clinical recovery efforts for people who are disadvantaged.

Conceptual Definitions

Mental Illness. Mental illness is a complex, not yet well understood phenomenon. While there is support for a genetic component, to date, there is no definitive evidence that schizophrenia (or the majority of mental illness diagnoses), are the result of neurobiological deficits, as is commonly understood and reported in the literature (Switzer, Dew & Bromet, 2013). While the necessity of defining the population being studied is a compelling reason to use the terms mental illness and schizophrenia, the approach used in this study does not assume that mental disorder is a disease or "illness" in the same way as diabetes, a common comparison (McMullen & Sigurdson, 2014). Standardized criteria for diagnosing discrete mental disorders (DSM, ICD-9 codes) lack validity (Zachar, Stoyanov, Aragona, & Jablensky. 2015) and there is convincing evidence that social beliefs and expectations, as well as special interest groups,

including pharmaceutical companies and psychiatric organizations, have heavily influenced what is viewed as psychopathology (Healy, 2012).

There is ample evidence, as well, that the act of designating behavior as pathologic is dependent on the context in which it occurs, who is being observed, and that the designation of abnormal or deviant behavior is reliant on how society as a whole views the behavior in question. The same cluster of emotional, behavioral and thought characteristics that form the symptom criteria for a mental illness diagnosis, however, have often been experienced in similar ways across history, as well as in diverse populations, cultures, and societies, suggesting that the social construction of deviance is also connected to an objective reality. It is the interpretation of this reality that is the social construction and these interpretations have changed throughout history. Distressed emotional states have been categorized as witchcraft, possession, the loss of one's soul, character defects, and most recently, as neurobiological deficits (Aneshensel, Phelan, & Bierman, 2013).

Carol Aneshensel and her colleagues (2013) noted that current criteria for defining madness are often "too amorphous to be useful except as a way of speaking about the conglomerate subject matter of psychiatry." (p. 3) As such, while this study will use psychiatric terminology to clarify understanding, the theoretical underpinning that guides this work and informs the conceptualization of mental illness (and related variables, such as recovery and remission), is associated with an alternative perspective preferred by many sociologists. This perspective posits that what is perceived as abnormal thoughts, behaviors and emotion fall into "the realm of normality," but are at the extreme end of the spectrum (Aneshensel, Phelan, & Bierman, 2013, p.5). More importantly, and of special interest to this inquiry, is the idea that emotional and psychological distress cannot be viewed as separate from the political, economic,

cultural and social context in which it occurs (Aneshensel, Phelan, & Bierman, 2013), which is the premise of this proposal.

Privilege. This study began with the definition provided by the online version of the Oxford Dictionary (n.d.) and discussed above — *"A special right, advantage, or immunity granted or available only to a particular person or group of people."* Though many demographic and personal characteristics have been associated with privilege (age, gender, physical ability/disability, sexual orientation, etc.), the definition here is narrowed to emphasize the role of race, childhood SES and current poverty levels. I avoid using the controversial term "white privilege," not because the idea lacks value but because the oppression and discrimination associated with race are likely to be confounded by mental illness stigma as well as the effects of poverty. However, evidence also indicates that the experiences of people of color in this country differ from those of their white counterparts, so when possible, evidence regarding the effects of race will be discussed separately from that of poverty. Time and duration of economic deprivation are also important, as evidence consistently indicates that poverty in the earliest stages of development is associated with multiple poor outcomes, including poor economic, social and health outcomes (Holzer, Schanzenbach, Duncan, & Ludwig, 2007).

Clinical Recovery Vs. Clinical Remission. Clinical recovery has been defined in various ways, but in general, a full recovery means the patient is free from symptoms, employed or going to school part time or more, developing and maintaining social relationships, and living independently for a period of two years or more (Liberman, Kopelowicz, Ventura & Gutkind, 2002). As discussed in more detail ahead, the secondary data to be used in this study is limited; only first episode participants were included in the original study and they were only followed for two years. Therefore, attempting to measure a full recovery was inappropriate. Instead, I

decided to measure *clinical remission*, per the criteria suggested by the Remission in Schizophrenia Working Group (Andreasen, et al, 2005).

Consensus-Based Remission Criteria. Remission, as defined by the preceding group, is the abatement of three core dimensions of psychopathology linked with schizophrenia: psychoticism, negative symptoms and disorganization, as measured using specific items on the Scale for the Assessment of Positive Symptoms (SAPS), Scale for the Assessment of Negative Symptoms (SANS) and/or Positive and Negative Syndrome Scale (PANSS) for a period of six or more months (Andreasen, et al, 2005). Remission occurs when symptoms no longer meet the threshold for schizophrenia. Symptoms used in the criteria are directly linked to those in Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV) (American Psychiatric Association, 1994) and can be measured using already established scales (PANSS, SAPS, SANS and the BPRS). Remission differs from recovery. The patient is asymptomatic, but remission implies that the patient, while exhibiting little to no symptoms, is susceptible to relapse. Remission can be viewed as a "necessary but not sufficient step toward recovery" (Andreasen et al, 2005, p. 442).

While the idea of remission is not new, within the current rubric of the "recovery orientation," it may be conceptually vague according to Davidson and Roe (2007). Because neither have been clearly delineated, remission can be confused with recovery "in" mental illness. Recovery "in," he argues emphasizes people taking an active role in managing their psychiatric condition, as well as being viewed by society as fully capable of making their own decisions. Remission, on the other hand, he argues, is a clinical state characterized by a short-term decline of symptoms that could likely be conceptualized as a "transitional step" as the field develops a scientifically based consensus for recovery (p. 6).

While Davidson and Roe (2007) argue that the concept of remission may be confused clinically with recovery "in," the criteria put forth by the Schizophrenia Working Group are based on the presence or absence of specific symptoms, rather than self-sufficiency, and have been found to be a valid measure of remission in multiple studies (Andreasen, Carpenter, Kane, Lasser, Marder, Weinberger, 2005). Remission criteria were validated in two ways in the evidence: first, by comparing different definitions of somatic remission; and second, by associating remission criteria with various outcome dimensions, including overall symptoms, quality of life and functional outcomes (Lambert, Karow, Leucht, Schimmelmann & Naber, 2010). Multiple studies have compared the criteria proposed by the Schizophrenia Working Group to that of Liberman et al, and found overall that while the Working Group criteria were more stringent, they also had better predictive validity (Sethuraman, Taylor, Enerson, & Dunayevich, 2005; Leucht, Beitinger & Kissling, 2007; Beitinger, Lin, Kissling, & Leucht, 2008).

Privilege, Mental Illness, and Functional Outcomes

Urbanicity and Schizophrenia Diagnosis. Of specific interest to this study are the associations between variables related to privilege (race, childhood socioeconomic status and poverty) and the epidemiology of schizophrenia. Though no causal role has yet been identified, multiple epidemiological studies have consistently shown higher rates of diagnosis in urban areas relative to rural neighborhoods. Children and adolescents growing up in cities have an estimated two-fold increase in developing schizophrenia later in life (Haddad et al, 2014). Moreover, in a brief narrative review of the evidence linking urban environment and the diagnosis of psychosis, author Van Os (2004) indicates that multiple studies have linked urban exposure to higher incidences of schizophrenia. Though Van Os (2004) explains there is no valid or standardized definition of what "urban exposure" means, various mechanisms have been

hypothesized to explain the association, including exposure to environmental toxins and infections, differing diets, and stress (Pedersen & Mortensen, 2006). Preliminary evidence also indicates that neighborhood deprivation, including community levels of fragmentation, social isolation and social inequality, may also play a role, albeit relatively small, in the development of schizophrenia (Van Os, Driessen, Gunther, & Delespaul, 2000). According to van Os (2004), however, the greatest conceptual weaknesses of all these studies are their failure to explain what "constitutes the true nature of the environmental exposure that poses as 'urbanity'" (p. 287), though it is also likely that economic deprivation and related neighborhood characteristics represent chronic stressors that also affect recovery efforts.

Serious Mental Illness and Poverty. As discussed previously, research has primarily focused on poverty, and to a lesser extent, race, as a potential cause (social causation theory) or result of mental illness (selection and drift theory). Little attention has been paid to effects of poverty on those who are already diagnosed, and these effects are therefore less clear (Perese, 2007; Topor et al, 2014). Poverty means that a person's basic needs are not being met and evidence has shown that the more serious the mental illness diagnosis, the higher the number of unmet needs (Perese, 2007). Basic needs include food, clothing, shelter, safety, health care, communication and transportation (Wiersma, 2006). Deprivation of basic needs can be a source of enormous stress and unmet needs are associated with lower quality of life, poor health, lower life satisfaction, and increased acute mental health care treatment, including hospitalizations and emergency room visits (Perese, 2007; Wiersma, 2006).

Other studies have looked at the psychological and social effects of poverty on people diagnosed with a psychotic disorder. Torpor and colleagues (2014) conducted a study to assess how people with a psychotic disorder managed their financial difficulties in everyday life. Using

grounded theory methods, the researchers interviewed 19 participants. Common themes that arose included the strain of trying to make ends meet, trying to create "a decent life" with no money, and different coping strategies to stretch limited budgets. Participants also suggested that poverty greatly limited social opportunities and negatively affected one's sense of self (Topor et al, 2014). Incorporating a quote from another article (de Figueiredo & Frank, 1982, p. 353), Topor and colleagues (2014) maintain that coping with mental illness is made more difficult by poverty:

> Social isolation, but also feelings of shame, feeling depressed, and having a negative self-image result from [poverty] and are not necessarily symptoms of illness. Such feelings are connected to a state of demoralization which consists of 'distress combined with subjective incompetence. Distress is manifested as symptoms, such as anxiety, sadness, discouragement, anger, and resentment' (p. 125).

Though most of the subjects in the study were able to meet most everyday challenges, lack of financial resources was a source of continued stress that negatively impacted their mental health and kept them from participating in social activities (Torpor et al, 2014). Though the researchers did not frame these activities in terms of recovery efforts, results of the study show that poverty effects go beyond that of material deprivation and may affect long-term outcomes associated with remission and recovery. Unfortunately, poverty among those with serious mentally illness is also common.

Community epidemiological studies and clinical reappraisal studies indicate that approximately 30% of the population in the U.S. meet criteria for 12-month DSM mental disorder (Kessler, Chiu, Demler, & Walters, 2005). Data from the National Comorbidity Survey Replication support these results, estimating the 12-month prevalence of at least one mental

disorder is 29%, and of these cases, 22.3% were classified as serious (Kessler, Chiu, et al, 2005). Evidence indicates that about 33% of people with serious mental disorder will live at or below the poverty line (Cook, 2006; Drake, Skinner, Bond, & Goldman, 2009), compared to about 13% in the general population (Semega, Fotenot & Kollar, 2017), though it is unclear how many in the first group were already poor prior to diagnosis. According to the 2014 Social Security Administration annual statistical report, 6 out of 10 recipients of the Supplemental Security Income (SSI) program under the age of 65 are diagnosed with a mental disorder[3] (Social Security Administration, 2014), and of those, beneficiaries tend to be younger than other disability recipients and the percentage of those receiving benefits continues to rise (Vick, Jones, & Mitra, 2012). Employment and educational outcomes are adversely affected by mental illness, including higher drop-out rates, lower wages and lower employment rates. Only a small percentage of those receiving SSI report working; 4.2% for those diagnosed with mood disorders and 4.4% for those diagnosed with schizophrenia or other psychotic disorders (Social Security Administration, 2014).

Mental illness is not only associated with the SES of the individual but may also be related to the SES of the family. A study using data from the 2007 Medical Expenditure Panel Survey (Vick, Jones & Mitra, 2012) analyzed data from 9,218 families, of which 2,186 had

[3] Robert Whitaker, award winning American journalist for his work covering medicine and science, argues in his book *Anatomy of an Epidemic* (2011) that modern psychiatric drug treatment has caused or acerbated the rise of disability. Before there was "mental health disability," those considered unable to function in society were hospitalized, as such, these numbers can serve as a proxy for those what would be considered disabled today. In 1955, one year after the introduction of Thorazine, 267,000 of the 560,000 people hospitalized for mental illness were diagnosed with schizophrenia, or one out of every 617 Americans. Currently, an estimated 2.4 million people receive disability benefits due to a diagnosis of schizophrenia, or one out of 125 people. Disability rates, he hypothesizes, have "increased fourfold" since the introduction of antipsychotics (p. 120). While this stance is considered controversial, there is recognition that antipsychotic effectiveness is limited. According to Thomas Insel, former director of the National Institute for Mental Health (2010), "Although both conventional and atypical antipsychotics reliably reduce delusions and hallucinations, they have not enhanced functional recovery (for example, employment) for people with schizophrenia." (p. 187)

members with at least one International Classification of Diseases-9 (ICD-9) psychiatric diagnosis. It found that the likelihood a family with a diagnosed working age member (ages 21 – 60 years) will be poor is 1.76 times higher than for a family without such a member. The type of diagnosis also affects the level of poverty; poverty rate for psychotic disorders was significant at for families that included a member with psychotic disorder, and the severity of poverty was also significantly higher for these families

Vick, Jones and Mitra (2012) also found that the families most affected by mental illness are those already at risk for poverty. Total family income was almost 9% lower for families with a diagnosed member, compared to those without ($p<0.01$), and wage incomes were 12% lower ($p<0.01$). Families with a black or Hispanic head of household experienced more severe poverty compared to white families, and poverty was significantly more severe for families of color that also had a member diagnosed with mental illness. Institutionalized people or those living in supported housing (two groups likely to have the greatest financial difficulties) were not sampled and the results are therefore not generalizable to the entire working-class population diagnosed with mental illness. As a result, the authors caution, the study estimates are likely low (Vick et al, 2012). Poverty and mental illness have long been associated in the literature and the above studies highlight how serious the problem is, especially for people of color. As such, it is not only important to understand how poverty contributes to mental distress, but also to understand its long-term impact on recovery outcomes to develop appropriate treatment approaches.

Educational Outcomes and Transitions to Adulthood. The onset of serious mental disorders tends to occur quite early; approximately half of all lifetime cases begin at age 14, and three-fourths by age 24 (Kessler, Berglund, et al, 2005). Early onset disrupts developmental milestones, including completing high school and applying for and attending post-secondary

education. According to the report on the implementation of the *Individuals with Disabilities Education Act, 2013* (U.S. Department of Education, 2014), only 37% of students with mental disorders graduate from high school. These numbers are low when compared to average US public school graduation rates, which have ranged from 79% to 85% since 2010 (Education Week Research Center, 2019). Findings from the National Longitudinal Transition Study II indicate that in 2003 only 22% of students with mental illness received any type of college education, and the numbers are even lower for obtaining a degree; 13% completed a two year education and 4% obtain a 4-year degree (Wagner et al, 2005). These numbers are even more striking when considering that in 2005, approximately 33% of high school graduates attended, but did not graduate from college, and 33% received a bachelor's degree or higher (Bozick, Lauff, & Wirt, 2007).

Further evidence of transitional difficulties for those diagnosed with emotional disturbance in school was reported in the National Longitudinal Transition Study (Wagner et al, 2005), which indicated that only 14% of youth identified as emotionally disturbed were living independently once out of school; 67% lived with parents and 3% were living in an institution or facility. This can be compared to high school students who would have graduated in 2005, only 22% of whom were living with parents (Bozick, Lauff, & Wirt, 2007). Approximately 89%, or 9 out of 10 youth with emotional disturbance, once out of school, experienced a serious negative consequence for their behavior, which resulted in school disciplinary action, employment termination or arrest. Of the youth diagnosed with mental disorder, 53% were working (Wagner et al, 2005), compared to 76% of all high school students (Bozick, Lauff, & Wirt, 2007). Interestingly, youth diagnosed with emotional disturbance were more likely than any other disability group to be employed full-time. While 64% reported they worked at some point since

leaving high school, only 37% reported they were currently working. The most commonly reported type of work was maintenance (28%), and clerical (15%) (Wagner et al, 2005).

Today, finding and retaining work in well-paying jobs with career opportunities are more reliant on educational attainment than in previous eras. According to the U.S. Bureau of Labor Statistics (2019), all 25 of the top paying occupations in the U.S. require a college degree or graduate education. Moreover, a college degree or graduate education is required for 22 of the 25 projected fastest growing occupations (U.S. Bureau of Labor Statistics, 2019). Education status also affects employment opportunities for those with mental illness. Not surprisingly, in an analysis of employment of individuals with serious mental illness conducted by the NHIS-D, education was found to be a significant predictor of employment in executive, administrative and professional occupations (Mechanic, Bilder, & McAlpine, 2002).

Developmental outcomes, such as the obtainment of a high school degree and living independently are impacted by the onset of a psychotic disorder. Failure to obtain a degree may contribute to lowered college enrollment and can impact later employment opportunities. For those diagnosed with a psychotic disorder and already at risk for educational disparities due to poverty or race, obtaining a degree is likely more difficult and may limit later educational and employment obtainment.

Employment Outcomes. Of special interest to this study are the sociodemographic variables related to occupational achievement in people with schizophrenia that are also related to privilege. Employment rates for those diagnosed with mental illness and schizophrenia vary a great deal in the literature. As such, precise rates of employment in the US are hard to ascertain (Marwaha & Johnson, 2004). Still, evidence indicates that race and other characteristics of the

patient and the environment may affect employment rates for people diagnosed with a psychotic disorder or serious mental illness.

Baseline data from the NIMH sponsored CATIE study, a large, national effectiveness trial for antipsychotic medication with nearly 1,500 participants, was used to examine patient and environmental characteristic associated with competitive employment and other job-related activities, such as volunteering, workshops or pre-vocational programs (Rosenheck et al, 2006). The authors found that prior to baseline 72.9% of the study participants reported no employment involvement. Of those who were involved, only 14.5% were competitively employed, while another 12.6% participated in some type of job-related activity. Employment was positively associated with less severe symptoms and higher intrapsychic functioning scores on Heinrichs-Carpenter Quality of Life Scale. This subscale assesses psychological characteristics thought to be distinct from schizophrenia symptoms, including motivation, curiosity, anhedonia, and empathy (Heinrichs, Hanlon & Carpenter, 1984). In addition, and in line with a hypothesis of this study stated in the introduction, obtainment of competitive employment, as compared to job-related activities or no employment was negatively associated with being black (Rosenheck et al, 2006).

In a review of employment outcomes, researchers found that in addition to premorbid functioning, work history and social skills were good predictors of occupational outcomes, as were cognitive functioning and family relationships (Tsang, Bacon, & Leung, 2000). A positive work history prior to diagnoses has been shown to be a significant, but modest predictor of employment for people in the community and those receiving services from vocational or supportive employment programs (Catty et al, 2008; Cook et al, 2008; Honkoken, Stengard, & Salokangas, 2007; Nordt, Müller, Rössler, & Lauber, 2007). Additional studies have found a

positive association between successful employment and advanced education (Cook et al, 2008; Nordt, Müller, Rössler, & Lauber, 2007).). A 24-month longitudinal multisite study used data collected from 1273 participants in the Employment Intervention Demonstration Program to examine the relationship between employment outcomes and demographic characteristics (Burke-Miller et al, 2006; Razzano et al, 2005). The authors differentiated between vocational outcomes: competitive employment and full-time employment (40 hours or more per week) and found that those who were white, male, younger and had a higher education, were significantly more likely to obtain competitive employment and to work full time (Burke-Miller et al, 2006). Previous occupational history was also a strong predictor of returning to work for clients identified as working in the private sector, as was not being self-employed[4], and younger age (Pluta & Accordino, 2006). Of the variables associated with employment of the serious mentally ill, most are also related to privilege: white, male, higher education and previous work history. As such, belonging to a less-privileged group can negatively affect employment, one of the criteria for recovery.

The effects of employment extend beyond increased income, however, and it should be noted that participation in the work force can impede or facilitate recovery. Stuart (2006) maintains that "no single social activity conveys more of a sense of self-worth and social identity than work," and goes on to state that employment for those with mental illness is:

[4] In a study looking at demographic characteristics of the self-employed, Moutray (2007) found that that self-employment may be related to privilege as well, as the more education one obtains, the more likely to be self-employed; 3.3% of those with some college, 4.4% with a baccalaureate degree, and 8.3% with graduate experience are more likely to be self-employed than not. Additionally, those own their home and those with more valuable homes were more likely to be self-employed. Evidence also indicates that those who are self-employed are more likely to be white (Moutray, 2007).

> …an important stepping-stone to recovery. It is a normalizing factor that provides daily structure and routine, meaningful goals, improves self-esteem and self-image, increases finances, alleviates poverty, provides opportunities to make friendships and obtain social support, enriches quality of life and decreases disability. (p. 533)

According to Stuart (2006), those who are diagnosed as mentally ill and unemployed, however, are in a position of "double jeopardy": they face stigmatizing attitudes as they attempt to find viable work and are further devalued for being unemployed (Becker, Drake, & Naughton Jr, 2005). As a result, their unemployment can result in financial difficulties and contribute to poor self-esteem and self-image, as well as isolation and marginalization (Stuart, 2006).

Schizophrenia and Quality of Life. Quality of life (QoL) is related to both clinical and functional outcomes in schizophrenia. Though QoL is not entirely independent of symptomology, in the case of schizophrenia, evidence has consistently shown that despite the presence of psychotic symptoms, nearly half of patients report an overall favorable QoL (Eack & Newhill, 2007; Galuppi, Turola, Nanni, Mazzoni & Grassi, 2010; Priebe et al, 2011; Vatne & Bjørkly, 2008). While it is clear that psychotic symptoms play a role in quality of life, evidence indicates that affective symptoms are a more robust predictor of QoL than are positive psychotic symptoms; studies have consistently linked the presence of affective symptoms, primarily depression, to lower QoL scores in people with schizophrenia (Dan, Kumar, Avasthi, & Grover, 2011; Karow, Wittmann, Schottle, Schafer & Lambert, 2014). Negative symptoms associated with schizophrenia can also adversely impact QoL, however, evidence indicates this usually happens when symptoms are prominent enough to result in substantive functional impairment, such as the ability to perform activities of daily living, live independently, participate in social

activities and maintain personal relationships (Rabinowitz et al, 2012; Rabinowitz, Berardo, Bugarski-Kirola, & Marder, 2013). What appears to be true, is that no matter the type of symptomology cluster, the more severe the symptoms, the more impact on quality of life (Dan, Kumar, Avasthi, & Grover, 2011; Karow, Wittmann, Schottle, Schafer & Lambert, 2014)

According to Lieberman et al (2008), measures of quality of life also incorporate conceptually similar variables to personal recovery, including "satisfaction with life, functioning in daily activities and social roles, personal preferences regarding goals, living conditions, safety, environmental restrictions, finances, and opportunities" (p. 490). Described as patient-centered in their approach (Ho et al, 2010), health related quality of life measures (HRQOL) are said to measure the "individual's perception of their position in life in the context of the culture and value systems where they live and in relation to their goals, expectations, standards, and concerns" (WHO, 1997, p. 1). Quality of life (QOL) is closely linked to subjective wellbeing and emerging evidence indicates that QOL is associated with measures also related to recovery; optimism, personal agency, autonomy, resilience, self-esteem and internal stigma (Eklund, Bäckström, & Hansson, 2003; Malla et al, 2004; Ritsner et al, 2003).

Quality of Life has also been linked to remission in schizophrenia as well as the remission criteria proposed by the Schizophrenia Working Group. In a study exploring relationships between remission criteria, quality of life and duration of improvement, researchers found quality of life improved for patients who met criteria for remission or those who were considered "improved" for longer periods of time (Dunyevich, Sethuraman, Enerson, Taylor & Lin, 2006). Findings from European, multi-country study support these results. Researchers examined the relationship between remission and quality of life in schizophrenia (Haro, Novick, Perrin, Bertsch, & Knapp, 2014). Data from approximately 6,500 patients were included in the

analysis and results indicated that patients in symptomatic remission experienced higher levels of quality of life and social functioning than those who were not. Moreover, patients who maintained remission over a period of three years had a much higher improvement in QoL than those with no symptomatic remission or periods of non-remission. Improved quality of life was associated with remission of symptoms, but also with employment and social involvement.

This association between the remission criteria and QoL, however, is not yet entirely understood. While multiple various longitudinal and cross-sectional studies have shown significant relationships between QoL and symptom abatement (Boden, Sundstrom, Lindstrom, & Lindstrom, 2009; Dunayevich, Sethuraman, Enerson, Taylor & Lin, 2006; Haro, Novick, Perrin, Bertsch, & Knapp, 2014; Haynes et al, 2012), other studies have shown QoL and symptom remission are not related (Carpiniello, Pinna, Tusconi, Zaccheddu, Fatteri, 2012; Karow, Moritz, Lambert, Schöttle, & Naber, 2012). This contradiction may be explained in part by part by the exclusion of affective symptoms in the remission criteria proposed by the Schizophrenia Working Group, though depression and anxiety are known to negatively affect quality of life (Hofer, Rettenbacher &Widschwendter, 2006; Huppert, Weiss, Lim, Pratt & Smith, 2001; Karow, Moritz, Lambert, Schöttle, & Naber, 2012; Karow, Moritz, Lambert, Schoder & Krausz, 2005).

Poverty, Race, and Functional Outcomes

Childhood poverty and race can result in a variety of negative developmental and life outcomes that are also related to functional outcomes in recovery from serious mental illness. For example, Duncan and colleagues (2010) collected information for 1,589 children whose families participated in the Panel Study of Income Dynamics and found that after controlling for economic conditions in later childhood and adolescence, there were striking differences in adult outcomes for children in early poverty compared to those whose early childhood income was

twice the poverty line. When compared with the higher income counterparts as adults, those living below the poverty line in early childhood worked 451 hours less per year and earned half as much. As adults, these children were more likely to receive food stamps, and two times more likely to report higher levels of psychological stress and poor health. The researchers also found gender differences – males living in poverty in early childhood were more likely to be arrested, while females living in poverty were more likely to bear children out of wedlock and required more cash assistance. Moreover, in the sample studied, poorer children were more likely to be Black, born in the south, have more siblings and younger mothers, and live in households rated as "dirty" by observers. Test scores and educational attainment of family members, as well as parental expectations for their children, were lowered in the households of children who were poorest (Duncan et al, 2010). As will be discussed in further detail below, the effects of poverty are far-reaching and likely impact multiple outcomes related to recovery from serious mental illness, including reduction of psychiatric symptoms, employment, living independently and quality of life.

Educational and Employment Outcomes. Educational status is related to variety of functional and psychological outcomes also related to a mental health diagnosis. Children born in poverty and to a lesser extent, racial minorities, are already at risk for low educational achievement and an early diagnosis of serious mental illness may only compound the issue. Because low educational obtainment is predictive of a variety of problems in living as adults, both functional and psychological, it is an important variable to consider when assessing recovery status. Poor people or members of racial minorities diagnosed with mental illness may have lower educational status than their wealthier or white counterparts.

Black and white children are born with no noticeable cognitive differences, yet by the age of two, differences can be discerned (Dobbie & Fryer Jr, 2011). By kindergarten, black children lag significantly behind their white counterparts in math and reading (Fryer Jr & Levitt, 2004). As children progress academically, the achievement gap continues to grow across all subjects and grades, even accounting for environmental characteristics (Fryer Jr, 2010; Neal, 2006) and once children enter school, early gains tend to diminish (Dobbie & Fryer Jr, 2011) .

These differences likely reflect the varied and dissimilar environments in which U.S. children live and go to school. Noting that environment plays a role in the large gaps in academic achievement, Ludwig and Sawhill (2007) summarize the differences between students at varying socioeconomic levels:

> …compared to kindergarteners from families in the bottom fifth of the socioeconomic distribution, children from the most advantaged fifth of all families are four times more likely to have a computer in the home, have three times as many books, are read to more often, watch far less television, and are more likely to visit museums or libraries. (p. 5)

Gaps in cognitive and non-cognitive skills in place by kindergarten persevere all through school and into later life, and as children continue through school, the gap tends to widen (Fryer Jr, 2010; Neal, 2006). Of course, SES is not entirely predictive of educational achievement and averages obscure the variation in socioeconomic groups; it is inaccurate to say that every child from a low SES group does poorly. Evidence indicates, however, that approximately five-sixths of children with high SES perform better than children with low SES, compared to about one-sixth of children with low SES who outperform high SES preschool children (Ludwig & Sawhill, 2007). On average, those who do poorly in school will experience various negative

lifetime outcomes, including limited employment opportunities, which may impede clinical recovery.

Significant disparities exist when comparing hiring, promotional and discriminatory practices of blacks compared to whites. When potential employers utilize race or other attributes of potential employees as "signals" of productivity discriminatory hiring practices can take place (Mong & Roscigno, 2010). Evidence suggests that blacks are less likely to be hired than their white counterparts; black men are twice as likely to be unemployed long-term as their white counterparts (Cohn & Fossett, 1995). They may, in fact, not even make it to the interview; two studies found that resumes that included names that sounded African American were less likely to receive call backs (Bertrand & Mullainathan, 2003). Once hired, blacks still face discrimination. Overall, the evidence suggests that blacks are less likely or more slowly promoted than whites (James, 2000; Smith, 2001), and that this may be due to supervisor bias and subjectivity (Mong & Roscigno, 2010), as evidence demonstrates that blacks also receive lower evaluations than their white counterparts (Elvira & Zatzick, 2002; Greenhaus, Parasuraman, & Wormley, 1990; Sackett, DuBois, & Noe, 1991).

The recent US housing and economic crisis (2007-2011) have also impacted how people are employed and how much they are paid. During the crisis, unemployment rates almost doubled to 9.1% from 5% (Autor, 2010). Though jobs have been returning to the market, growth has polarized into high paying jobs requiring highly skilled workers or low paying jobs that can be filled with unskilled workers, with little in-between for those "middle skill" workers, according to labor economist and researcher David Autor (2010). In the past, many jobs provided wages that allowed workers to live at a middle-class level but did not require more than a moderate level of education (graduating from high school but less than a four-year degree).

Leading explanations for this polarization cite offshore hiring practices and automation of jobs typically taken by workers with a moderate education (high school graduate, but less than a 4-year degree) as responsible. Regardless of the reasons, career opportunities for those without a college have become limited. While there is a rising demand for highly educated workers due to lagging supply, the demand for middle skill jobs has declined, limiting the job market for those without a secondary education. Moreover, and equally alarming, as wages have risen for highly educated workers (graduate level degree), wages have fallen or stagnated for those with a high school education or less, but also for men with 4-year degrees. As such, "middle-skill" and unskilled workers have generally moved downward in occupational skill and earnings distributions (Autor, 2010).

Though the recession heavily impacted the growing economic divide, the differences between the upper and lower classes been widening for years. Using data from the Panel Study of Income Dynamics, researchers Shapiro, Meschede and Osoro (2013) followed the same families for a period of 25 years (1984-2008). Results indicated that the wealth gap between whites and blacks has almost tripled in this time; from $85,000 to $326,500. Differences in wealth between blacks and whites are the result of differences in household income, home ownership, unemployment, college education, and family wealth/inheritance. According to the researchers, responsibility for financial achievement is commonly attributed to personal characteristics and behavior choices, but they also acknowledge there are larger forces at work:

> …the evidence points to policy and the configuration of both opportunities and barriers in workplaces, schools, and communities that reinforce deeply entrenched racial dynamics in how wealth is accumulated and that continue to permeate the most important spheres of everyday life (p. 1 - 2)

As evidence of this, the authors point to findings that equal achievement did not result in equal wealth for black families. For example, higher educational levels increased wealth for both black and white families but produced more wealth for whites than blacks overall. Similarly, income gains resulted in more wealth for both types of families, but the overall gains were lower for blacks (Shapiro, Meschede and Osoro, 2013).

As mentioned above, Stuart (2006) characterized those who are mentally ill and unemployed as being in a position of "double jeopardy"; they face stigmatizing attitudes when they find employment, making it difficult to find work, but then are also stigmatized for not working. In the case of race, trouble may also be coming from additional sources. Racial minorities diagnosed with mental illness face stigmatizing attitudes and may also face racial discrimination, further eroding their chances to find permanent and stable employment.

Socioeconomic Status, Race and Quality of Life. Evidence indicates that quality of life is impacted by race and socioeconomic status. In the current literature, QoL is an umbrella term often used to describe a variety of different measures looking at various aspects related to patient perceptions of well-being and functionality. Though QoL measures can capture different aspects of the concept, they usually include four broad health related dimensions; physical functioning, mental health status, social health and functional health (Post, 2014).

Health-Related Quality of Life (HRQOL). Measures of HRQOL are generally considered a subset of quality of life measures as they seek to assess QoL through factors thought to directly impact physical and mental health. This can be health condition specific, for example, assessing how schizophrenia or diabetes impact quality of life, or this can encompass characteristics of the population being studied, such a race or socioeconomic status (Post, 2014).

The Center for Disease Control Health-Related Quality of Life survey (CDC HRQOL-4) was developed by the Center for Disease Control (CDC) and included in multiple national health related surveys, including the Behavioral Risk Factor Surveillance System surveys (Zahran et al, 2005). In total, between 1993 and 2002, almost 1.3 million subjects completed the HRQOL portion of the survey and the results were reported in a 2005 study (Zahran et al, 2005). The CDC HRQOL-4 included four questions and asked respondents to rate their health and mental health as excellent to poor, as well as to assess the number of physically unhealthy days, the number of mentally unhealthy days and the number of days where activity was limited by either health or mental health problems.

In terms of race, approximately 60% of white respondents said their health was "excellent" or "very good," compared to 48% of black respondents and 43% of Hispanic respondents. During the same time period, almost 20% of Blacks and approximately 21% of Hispanic/Latinos reported their health as "fair" or "poor," compared to only 15% of whites. There was very little variation between the number of days respondents endorsed as "physically unhealthy" (range 3.1 – 3.5), "mentally unhealthy" (range 2.9 - 3.4) or the number of days activities were limited (1.7 to 2.2) in terms of race (white, Black, Hispanic), though in general, whites reported doing slightly better in each category (Zahran et al, 2005).

The numbers for income were more striking. Almost 74% of those making more than $50,000 a year reported "excellent" to "very good" health, compared to about 46% for those making between $15,000 and $24,999 and about 36% making less than $15,000 a year[5]. Those who reported the lowest incomes also reported the poorest health. Almost 32% of those with an

[5] When calculating inflation using the Consumer Price Index for all Urban Consumers (CRI-U), $50,000 in the year 2000 is equivalent to about $75,000 in 2019 and %15,000 is equivalent to about $22,000 (U.S. Bureau of Labor Statistics, n.d.).

annual income of <$15,000 reported their health as "fair" or "poor," compared to only 10% for those with incomes between $25,000 and $49,999 and 5% of those with an annual income of >$50,000. Those who reported annual household incomes of less than $15,000 had an average of 5.9 physically unhealthy days per month compared to 1.9 days for those making $50,000 annually. The number of mentally unhealthy days for subjects with an annual income of >$50,000 was more than twice that for those who reported annual incomes of less than $15,000 (4.8 vs. 2.3). Subjects who were poor were also more likely to have days where activity was limited. Subjects making less than $15,000 were limited in their activities for 3.8 days, while subjects making over $50,000 were limited for only 1 day. Findings from this report indicate that race and income both play a substantial role in perceptions of health, as well as how health and mental health issues impact daily functioning (Zahran et al, 2005).

Health-related quality of life can also be impacted by perceived racial discrimination. A recent study looked at the impact of race, language preference (English or Spanish) and perceived discrimination on quality of life in Latino and non-Hispanic white populations, using data from the 2012 – 2014 Arizona Behavioral Risk Factor Surveillance System (Garcini, Renzaho, Molina and Ayala, 2019). Study researchers restricted their study to only include English-speaking Non-Hispanic Whites and Latinos, who were grouped by their language preference (English or Spanish). Within the survey, two questions were included that looked the physical and emotional reactions to perceived discrimination. Findings indicated that Hispanics were more likely to report poor self-reported health than whites, regardless of language preference, but that those who preferred to speak Spanish were more likely to experience physical and emotional reactions related to perceived discrimination that decreased their HR-QOL(Garcini, Renzaho, Molina and Ayala, 2019).

Quality of Life, Subjective Well-Being and Life Satisfaction. While HR-QOL surveys generally focus on items related to perceived health and mental health, the more general term "quality of life" encompasses a larger group of measures less easily categorized. For the purposes of this study, we will be discussing measures relating to subjective well-being, which refers to QOL measures related to the subjective evaluation and reactions of the respondent, and include measures of well-being, life satisfaction, self-esteem, optimism, and happiness (Post, 2014).

In one of the only studies looking at multiple measures of subjective well-being, race and SES, researchers used data from the Midlife in the U.S. (MIDUS) study to look at the relationship between social cultural factors and psychological assets, defined as optimism, life satisfaction and positive affect (Boehm, Chen, Williams, Ryff, and Kubanksy, 2015). Social cultural factors included gender, race/ethnicity[6], highest level of education obtained by the parent, highest level of education obtained by the participant, occupational class, occupational prestige, household income and social mobility trajectories. Data from the first study phase in 1994 and the second phase in 2004 wave were used and included 4,415 randomly selected participants from across the United States. Study findings show significant relationships between social culture factors and the measures of optimism and life satisfaction, and to a lesser degree, positive affect (Boehm, Chen, Williams, Ryff, and Kubanksy, 2015).

In terms of race, optimism and life satisfaction were significantly higher for whites, than for blacks, though positive affect (defined as "happiness" by the authors) was higher for blacks.

[6] Though the MIDUS study included all races and ethnicities in the original sample, results of the current study related to race are limited to the finding related to black and white populations only (Beohm, Chen, Williams, Ryff & Kubsansky, 2015). Though not discussed in the content, it appears from the descriptive data included in the study, that Hispanics and other people of color were excluded from the race findings, but it is unclear if these subjects were excluded from the other social factor measures (educational levels of the parent or participant, occupational status and household income).

When looking at measures related to socioeconomic status, subjects with a parent who had a college degree or higher were significantly more optimistic than those who parents had a high school education or lower, though parental education did not impact satisfaction. Both satisfaction and optimism were significantly higher for subjects who had a college degree or higher than those with lower educational status, and the relationship, according to the authors was "strikingly linear;" with each increase in educational status, there was an equivalent increase in optimism (Boehm, Chen, Williams, Ryff, and Kubanksy, 2015).

Life satisfaction and optimism were also linearly related to occupation. Occupational class was first broken down in to three categories: 1) managerial/professional; 2) technical/sales/clerical/service; and 3) manual. Occupational prestige on the other hand, was delineated using Duncan's Socioeconomic Index, resulting in three categories, high, medium and low. Results indicated that subjects who were in managerial/professional occupations experienced the highest levels of life satisfaction and optimism and those who were in manual occupations experienced the lowest levels. Furthermore, occupational prestige was also positively associated with life satisfaction and optimism; those with the highest prestige reported higher levels, while those with the lowest prestige reported low levels. Positive affect did not paper to be affected by either occupational class or prestige. Patterns of social mobility (categorized as persistently high, upwardly mobile, downwardly mobile and persistently low), were also positively associated with optimism and life satisfaction, but not with positive affect (Boehm, Chen, Williams, Ryff, and Kubanksy, 2015).

Overall, the results of this study indicate that both race and socioeconomic status are associated with optimism and life satisfaction, but the study is not without limitations. As the authors state, because the study is correlational, cause is not established. Results of the study are

comparable to other findings, however, and included a large, randomly selected, national sample. Despite the randomization, however, the sample was primarily white (87%), female (56%), and between the ages of 40 and 59 (53%). As such, the authors explain, the sample may not be generalizable to diverse populations. Finally, the results described may be conservative; participants in MIDUS were more likely to be educated, so the reported findings could be due to selective attrition (Boehm, Chen, Williams, Ryff, and Kubanksy, 2015)

Though race appears to impact life satisfaction, SES may be a larger contributor. In a 2009 cross-sectional study using data from the 2001 National Health Interview Survey and the 2007 Behavioral Risk Factor Surveillance Survey System, researchers evaluated the disparities related to race/ethnicity in life satisfaction, and then assessed the relative contribution of socioeconomic status to life satisfaction (Barger, Donoho & Wayment, 2009). Responses from the 350,000 participants included in the study indicated that while most subjects reported being satisfied or very satisfied , only 36% of Blacks and 40% of Hispanics reported being "very satisfied" compared to 46 – 47% of whites. Moreover, Blacks were somewhat more likely to report being dissatisfied (8%) then were whites (6%) or Hispanics (5%). The difference between whites and blacks was weakened once SES was controlled for, however, and the differences were eliminated for Hispanics. Evidence overall indicated that life satisfaction was consistently associated with SES, as well as other socioclincal variables, such as health status, and social relationships and emotional support (Barger, Donoho & Wayment, 2009). Though also correlational, results from this study both support previous evidence, including the study above, and potentially provide a more comprehensive view of the relationship between life satisfaction, race and SES.

Unintended Contributions of Recovery "In" Schizophrenia

Within the field of mental health, conceptualizations of what constitutes recovery from schizophrenia and other mental disorders have varied substantially, defined in dozens of different ways (Onken, Craig, Ridgway, Ralph, & Cook, 2007). Nonetheless, approaches can broadly be categorized as either "recovery from" mental illness or "recovery in" mental illness (Davidson & Roe, 2007). Recovery "from" schizophrenia encompasses definitions associated with conventional psychiatric beliefs of neurobiological deficits and emphasizes the functional aspects of recovery, including the amelioration of symptoms and a return to school or employment, and is the focus of this study's inquiry.

Recovery "in" mental illness has a more constructive, albeit ambiguous definition: "A process of change through which individuals improve their health and wellness, live a self-directed life, and strive to reach their full potential" (Substance Abuse and Mental Health Services Administration, 2012, p. 3). The current conceptualization is closely related to recovery in the addictions field: goals include learning to live with, and then beyond, the disorder. The literature describes the focus of recovery "in" schizophrenia as the development of psychological characteristics including hope, purpose and meaning, personal responsibility, as well as the reformation of identify and social relationships. Though this approach has received much attention as of late and is more inclusive of the wide range of experiences for those with serious mental illness, the vagueness of the approach makes operational definitions of the term more difficult (Onken et al 2007; Liberman, Kopelowicz, Ventura, & Gutkind, 2002).

The current conceptualization of recovery "in" mental illness is also vastly different from the consumer-oriented vision from which it emerged. Recovery "in" mental illness (also termed "recovery-orientation," "recovery philosophy," or "recovery vision"), is seen to represent "a fundamental and radical departure from the past" and the roots of the movement can be traced

back to the 1960s, when former patients began to protest the psychiatric abuses they had been subjected, argues psychiatric historian Joel Braslow, (2013, p. 78). Fueled by the civil rights movement and the writings of anti-psychiatrists, they sought to re-define themselves as something other than "mentally ill patient" and saw their larger problem as "another instance of state oppression, capitalism, patriarchy or medical hegemony" (Braslow, 2013, p. 797). Arguing for the enforcement of human rights rather than protections for those deemed mentally ill, and for peer-run alternatives to psychiatric treatment, the protest was also responding to the systemic social inequities that affected those deemed mentally ill.

Despite the emphasis placed on systemic social change in the 1960s[7], Braslow (2013) argues, the modern recovery movement has increasingly followed a neoliberal discourse that mirrors welfare reform policy begun by former U.S. President, Ronald Reagan. Much like the welfare recipient, the recovered consumer is expected to shoulder the responsibility of recovery and to become independent. In a discussion of the differences between traditional recovery and the recovery orientation approach, prominent recovery researchers Larry Davidson and David Roe write:

> Recovery refers instead to overcoming the effects of being a mental patient – including poverty, substandard housing, unemployment, loss of valued social

[7] It can also be argued that the current recovery movement, which emerged in the late 1980s and early 1990s, bears only superficial resemblance to the original intent of those who fought for change. Psychiatric historian Joel Braslow (2013) argues that by embracing the new vision of recovery as psychiatric progress and defining the movement as "revolutionary," traditional psychiatry has attempted to distance itself from its dark past, while at the same time maintaining status quo. While superficial attention has been paid to the patients' right to self-determine, he proposes, goals of consumer-run alternatives have been superseded by recovery-oriented mental health programs run by mental health professionals. This assertion is supported by a 2001 paper (Jacobson & Greenley, 2001) in which recovery-oriented service models are described:

> > Although many of these services may sound similar to services currently being offered in many mental health systems, it is important to recognize that no service is recovery-oriented unless it incorporates the attitude that recovery is possible and has the goal of promoting hope, healing, empowerment, and connection (Jacobson & Greenley, 2001, p. 485).

In other words, what differentiates old and new recovery approaches in clinical practice is a change in attitude.

> roles and identity, isolation, loss of sense of self and purpose in life, and the iatrogenic effects of involuntary treatment and hospitalization – in order to retain, or resume, some degree of control over their own lives (Davidson & Roe, 2007, p. 462).

What is not explained is how this is supposed to happen when there is a "remarkable inconsistency in how the notion is used to inform practice" (Davidson & Roe, 2007, p. 462). As Braslow (2013) points out, while the recovery literature is "brimming with well-meaning platitudes about hope and the need for '"system transformation,"' (p. 801), little is said about the need for redressing the "material and symbolic disadvantage" that often plagues those who are diagnosed with serious mental illness (Hopper, 2007). What is also missing from the conversation are substantive debates about class, race, gender, and combinations thereof, which Hopper (2007) postulates underscore "the defining centrality of psychiatric disability" (p. 4). If recovery depends at least in part on overcoming socioeconomic disadvantages and this disadvantage is not directly addressed within the mental health system (or any other, for that matter), it is worthwhile to ask who actually benefits from recovery efforts.

Summary of Evidence

Many people can and do recovery from schizophrenia and other psychotic disorders, and even larger portion experience periods of significant improvement and remission. What is not known, however, is how privilege impacts long-term outcomes.

Normal developmental trajectories of adulthood are interrupted and reprioritized when someone is diagnosed with serious mental illness. Participation in school and work are often negatively affected by schizophrenia due to symptomology, but also by the stigma that surrounds serious mental illness, especially the psychotic disorders. The obtainment of a high school degree is meaningful in that it increases opportunities for college enrollment and employment,

yet many students diagnosed with schizophrenia struggle to graduate and few continue to college. Unfortunately, unemployment is also common trend among those diagnosed with serious mental illness, even with an education. As a result, many of those diagnosed will live at or below the poverty line. Poverty not only effects the attainment of basic needs, such a food, clothing, shelter, transportation and health care, but also negatively affects psychological and social outcomes. Quality of life is negatively affected by the strain of living in constant need, as is socialization – it's difficult to participate in social activities with no money. Even when those diagnosed were able to meet their basic needs, poverty engendered feelings of shame, depression and demoralization. Recovery from serious mental illness involves overcoming these barriers.

A full clinical recovery generally means the patient is no longer symptomatic, but also that they are employed or going to school part time or more, living independently and involved in healthy social relationships, usually for two or more years. While in remission the patient also improves significantly, though for shorter period (about 6 months). Quality of life is also associated with recovery and remission as it is related to booth clinical and functional outcomes of schizophrenia, but also provides an assessment of overall well -being independent of clinical symptoms. While emerging evidence seems to indicate that living in poverty impacts mental health outcomes, much less is understood about the impact of life-long poverty and race. Though it is expected that recovery from schizophrenia will be challenging for most, it is likely that those impacted by poverty and racial inequities will have a harder time meeting recovery goals, as they are already at a disadvantage.

Economic and racial disadvantage are likely to be more significant for people already diagnosed with schizophrenia, and as such, they will be less likely to achieve remission or recovery. Educational outcomes are adversely affected by childhood poverty and racial

inequities, limiting employment opportunities. Poverty often leads to the receipt of welfare benefits, and childhood poverty only increases the likelihood of dependency, decreasing the chances of living independently. Social activities, and therefore the ability to develop and maintain meaningful relationships is also impacted by poverty. Economic deprivation also negatively affects psychological functioning. As discussed above, those with schizophrenia who are not privileged are likely to be poorer and sicker than those who do have privilege. As a result, they may be much less likely to obtain goals significant to recovery, including symptom abatement, school or work involvement, good quality of life and improved functional outcomes.

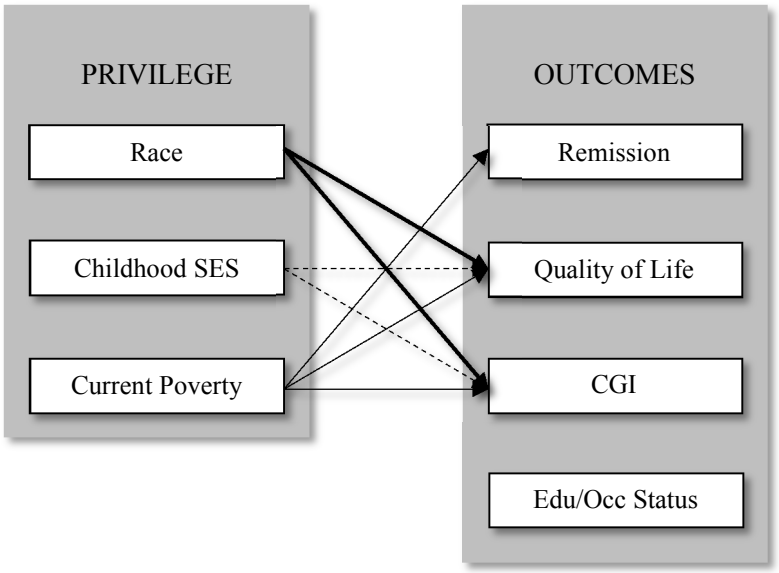
According to Das et al, worldwide findings suggest that the relationship between psychiatric morbidity and low-socio-economic status are both significant and strong (Das, Do, Freidman, McKenzie & Scott, 2007) Yet clinically, the effects of poverty are rarely addressed (Perese, 2007; Topor, 2016). Most evidence connecting mental illness and poverty has focused on identifying whether poverty leads to mental illness or mental illness leads to poverty, however, to date, there is little evidence regarding the effects of current poverty on long-term outcomes in schizophrenia. Moreover, the relationship between childhood poverty and race has been studied very little, despite significant evidence that poverty, and to a lesser extent race, increase the likelihood of poor outcomes as adults. The proposed study will attempt to move the evidence base forward by examining the following aims and their related hypotheses, keeping in mind that all aims are exploratory, primarily conducted for the purpose of characterizing the relationship between privilege and recovery.

Study Aims and Hypotheses

Figure 2 shows the hypothesized relationships between the components of privilege and the study outcomes. Based on the literature review above, I hypothesized that childhood socioeconomic status and current poverty would impact all outcomes (remission, quality of life,

clinical global functioning, and educational/occupational status) and that race would impact all outcomes except remission.

Figure 2. Relationships Between Privilege Components (Race, Childhood Socioeconomic Status and Current Poverty) and Outcomes



Aim One. To examine whether the level of privilege (race, childhood socioeconomic status, current poverty) affects clinical remission (remission, not in remission) over time among people with schizophrenia and other psychotic disorders, controlling for socio-clinical factors.

Hypothesis One. Lower levels of privilege will be positively associated with fewer time points in clinical remission over a two-year period, controlling for socio-clinical variables.

Aim Two. To examine whether the level of privilege (race; childhood socioeconomic status; current poverty) affects the level of quality of life over time among people with schizophrenia and other psychotic disorders, controlling for socio-clinical factors.

Hypothesis Two. Lower levels of privilege will be positively associated with lower levels of quality of life over a two-year period among people with schizophrenia and other psychotic disorders, controlling for socio-clinical factors

Aim three. To examine whether the level of privilege affects the level of clinical global functioning over time among people with schizophrenia and other psychotic disorders, controlling for socio-clinical factors.

Hypothesis three. Lower levels of privilege will be positively associated with lower levels of clinical global functioning over a two-year period among people with schizophrenia and other psychotic disorders, controlling for socio-clinical factors

Aim four. To examine whether the level of privilege affects the duration of time employed or attending school over a two-year period among people with schizophrenia and other psychotic disorders, controlling for socio-clinical factors

Hypothesis four. Lower levels of privilege will be positively associated with a shorter duration of occupational or educational involvement over a two-year period, among people with schizophrenia and other psychotic disorders, controlling for socio-clinical factors.

CHAPTER 3
METHODS

This Methods chapter is organized in two main parts. First, I discuss my search for a secondary data set, the acquisition of the Recovery After an Initial Schizophrenia Episode (RAISE) study data set, and describe the RAISE study design and methodology. I also describe the extent of missing data that I encountered following the acquisition of the RAISE data, and choices I made for the investigation as a result.

The second part describes the methods I employed in the current study to assess the relationship between privilege and clinical and personal recovery, including the sample, variables and measures, as well as the analysis procedures. I used Multilevel Modeling (MLM) to answer the overarching research questions regarding the relationship of privilege to recovery outcomes, but also to provide additional information on the impact of the covariates included in the study. These variables include marital status, psychiatric diagnosis and treatment group, and are discussed in more detail below.

In general, I use expressions such as "the RAISE study" or "RAISE researchers" to refer to what publications from the RAISE researchers describe as the methods they employed and the findings they reported. In contrast, I refer to "the current study," "this study," and similar expressions to refer to my dissertation study.

Search for Secondary Data

Realizing that the main research question would be best answered using longitudinal data and that the time limitations and resources of this dissertation process would limit the time subjects could be followed in experimental study, it was decided that secondary data, ideally a longitudinal study following individuals for a sufficient period to assess recovery, would be suitable. For this study, data from the Recovery After an Initial Schizophrenia Episode (RAISE)

study was used to assess the relationship between privilege and recovery. The complete study dataset was obtained from the National Institute of Mental Health (NIMH) Data Archive program (NIMH, n.d.) via a formal request through UCLA in December of 2016.

Initially, over a period of three months, I systematically identified and individually contacted more than 50 researchers regarding access to data in seemingly relevant longitudinal studies they had conducted or authored. While mostly supportive of the research question, the authors responded that the datasets requested no longer existed (Strauss & Carpenter, 1974; McGlashan, 1984), the sample studied was too small to adequately test the hypothesis (Harrow, 2008), or that measures did not capture the early childhood socioeconomic data necessary to answer the question (most of the rest). About 10% of the researchers did not respond. While the RAISE study had been considered as a potential data source early in this search process, an initial review did not indicate that the data included the necessary childhood socioeconomic data, nor how much data was missing overall. After a recommendation by one of the researchers contacted, the codebook for the study was obtained and it indicated that the appropriate childhood and current social class variables were included in the measures, and the choice to use the RAISE study data was made despite the missing data.

RAISE Study Design

The following discussion regarding the RAISE study design and intervention and the RAISE data were taken from two articles, the first describing the background, rationale and methods used in the study in detail (Kane et al, 2015). and the second providing some discussion of missing follow-up data (Rosenheck et al, 2016). The RAISE study was a national longitudinal study that assessed the effectiveness of a multimodal treatment intervention for first-episode psychosis. Randomization techniques were utilized to assign 34 sites across the United States, containing a total of 404 individual participants, to one of the two treatments: NAVIGATE, the

experimental treatment, or community care as usual, the control condition. RAISE was designed to provide treatment for a minimum of 2 years.[8] Subjects were assessed monthly by phone regarding service-related activities and quarterly for financial and demographic updates. Every 6 months participants were interviewed in person to assess clinical outcomes. Although the study treatment conditions could not be blinded completely from the RAISE researchers, they attempted to address potential issues by using both on-site and centralized assessments. Service activities and demographic data were collected by trained research assistants on site, either via phone or in person. Clinical diagnosis and assessments, on the other hand, were conducted live, using two-way video, by experienced and trained offsite clinicians from MedAvante (a company that provides trials with centralized remote offsite research), who were blind to treatment condition.

Launched by the National Institute of Mental Health in 2008, the primary objective of the RAISE study was to compare the impact of coordinated specialty care (NAVIGATE) to services typically received in the community on quality of life[9], with remission, recovery and cost effectiveness comparisons as secondary objectives. The RAISE project included two studies – the RAISE Early Treatment Program (RAISE-ETP) which assessed the effectiveness of NAVIGATE, and the RAISE Implementation and Evaluation Study (RAISE-IES) which focused on the clinical and administrative characteristics related to establishing successful early treatment programs.

RAISE Study Interventions. According the RAISE authors, successful specialized treatment programs for first-episode psychosis had been developed worldwide, but

[8] RAISE subjects could stay in the subject for a period of 5 years, however these data are not available for use.

[9] The RAISE researchers identified "quality of life" as the primary outcome measure for the RAISE study, indicating that it is better measure of recovery "in" mental illness (Kane et al, 2015).

implementation in the U.S. was more limited, possibly due to the complexity of reimbursement in a multi-payer health care system. In response, the authors explain, NIMH began RAISE with the goal of developing and testing interventions, such as NAVIGATE, that would improve long-term outcomes in community care settings, but could also be reimbursed through health care payment systems available in the U.S.

Comprised of four primary interventions – individualized medication management, family education, individual resilience training and supported employment and education – NAVIGATE is conducted by a small dedicated multidisciplinary team. Teams members usually include a medical professional who prescribed and monitored medication treatment, including side effects. Two mental health clinicians provided case management services, as well as "individual resilience training (IRT), a psychotherapeutic approach aimed at helping clients set personal goals, enhance wellness and personal resiliency, learn about psychosis and its treatment, improve illness self-management, and progress toward personal goals." Clients were also offered the opportunity to work with a supported education and employment specialist in order to develop and meet their educational and occupational goals. Finally, the team director, another mental health clinician, was responsible for coordinating services and conducing the family education program.

Guided by three broad theoretical frameworks, the authors explain, the stress-vulnerability model, the recovery orientation model and "the general field of psychiatric rehabilitation," the developers of RAISE wanted to address issues specific to the typical individual experiencing first-episode psychosis. The goals of the study included reaching recovery as defined by the individual, which can include attaining functional roles, involvement in meaningful social relationships and leisure activities, and enhanced well-being (self-identity,

purpose, and self-esteem, for example). Thus, in addition to symptom reduction, the RAISE researchers evaluated functional recovery, including quality of life, education, employment and social relationships. In addition to traditional psychiatric services such as medication and psychotherapy, NAVIGATE also included approaches intended to help clients become more self-sufficient, including learning to navigate complex mental health care systems and fostering illness insight and understanding, as well as encouraging self-empowerment and self-determination. NAVIGATE was more effective than community care as usual, and as such was included as a covariate and these results will be discussed below on pages 89 – 90.

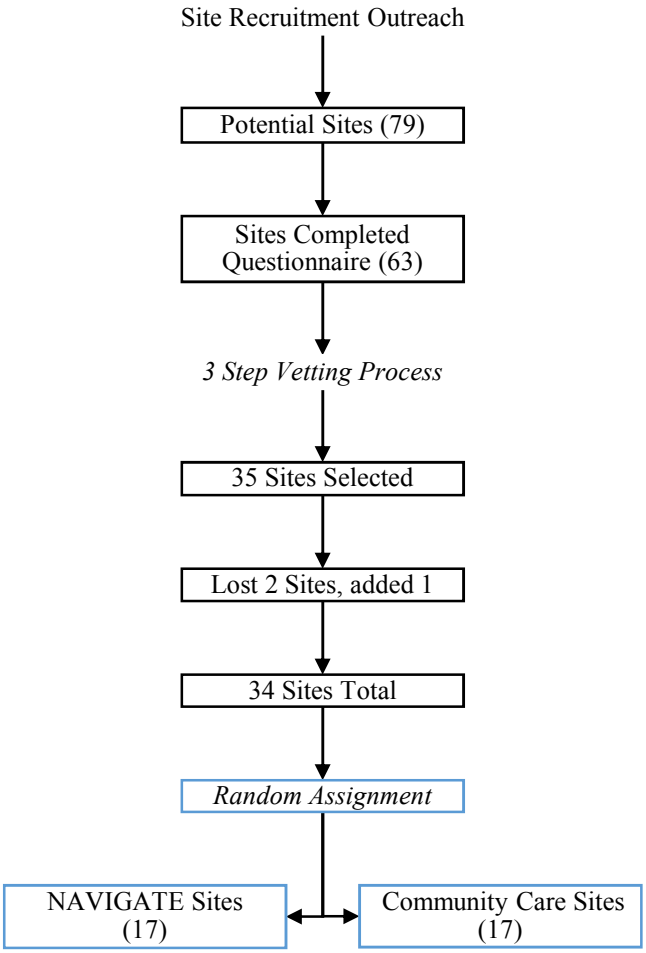
RAISE Sample. The RAISE study recruited and assessed at baseline 404 participants between the ages of 15 and 40 years. They were included if they could participate in the study activities in English, provide informed consent per IRB protocol, and they met DSM-IV criteria for one of the following conditions: schizophrenia, schizoaffective disorder, schizophreniform disorder, and psychotic disorder not otherwise specified (NOS). Exclusion criteria consisted of a prior episode of psychosis; a diagnosis of bipolar disorder, substance induced psychosis or psychotic episode due to a medical condition; neurological disorders that interfered with diagnosis and prognosis; serious head trauma or other health conditions that would affect diagnosis, treatment or prognosis. To increase recruitment, patients who had received up to, but no more than, 6 months of antipsychotic medication were allowed in the study. Patients were asked if they would like to participate in RAISE, and upon agreement, were recruited and provided the treatment available at their site.

RAISE Sampling Method. While RAISE researchers claim to have used a cluster randomization design, they instead appear to have used a combination of purposive sampling and

random assignment[10]. Community mental health clinic sites were recruited across the U.S. using advertising, personal contacts and outreach to multiple large mental health organizations. Sites included in the recruitment process were screened, then purposively selected based on the appropriateness of the site. RAISE researchers do not state how many sites were initially contacted for inclusion but explain that 79 sites responded, of which 63 filled the survey required for inclusion in the study. These 34 sites were then randomly assigned into two groups; one that received the intervention, the other to receive community care as usual (Figure 3.).

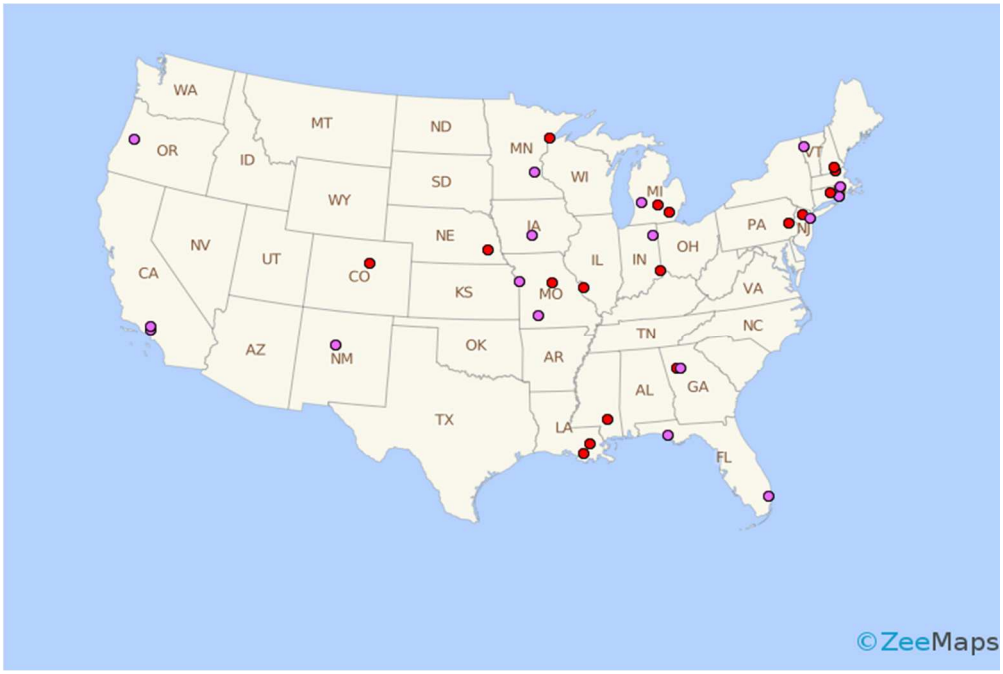
[10] Cluster sampling is a two-step probability sampling technique in which the population of interest is first divided into clusters or groups, often geographically (regions, cities, towns, neighborhoods, ect). Once divided, the clusters to be included in the study are then randomly selected and all participants from within the cluster are included in the sample (Acharya, Prakash, Saxena & Nigam, 2013). In purposive sampling, a non-probability sampling technique, the researchers decide what information needs to be collected and purposely find participants willing and able to complete the study (Etikan, Musa, & Alkassim, 2016). In RAISE, the sites chosen to be in the study do not appear to be selected randomly, the key component of cluster sampling. Instead, the clinical sites included in the study appear to be chosen based on information gathered by the researchers, then randomly assigned to NAVIGATE or treatment as usual.

Figure 3. Site Selection and Randomization Process for RAISE Study Sample



To meet the objectives of establishing a national model of first treatment that would fit into today's current health and mental health care system, RAISE researchers recruited different sites, including private, state and hospital mental health clinics and centers, choosing from both inpatient and outpatient settings across the U.S. To increase the representativeness of the sample, the RAISE researchers stated that sites included in the study were also chosen based their geographic diversity (rural, urban and suburban) as well as the demographic diversity their patients. Locations in 21 states were included, with most sites located in the Midwest, North East and Southeast US regions (See Figure 4). In the RAISE study, researchers decided to assign randomly each site to one treatment condition, and to exclude sites with pre-existing first episode or early intervention treatment programs, in order to avoid cross-over treatment effects and increase treatment fidelity. For the purposes of the current study, it was felt that the inclusion of over 400 geographically and demographically diverse participants from multiple types of communities (urban, rural, suburban) increased the likelihood that the results could be generalized to other populations and settings.

Figure 4. Locations of RAISE Study Sites



Note. Figure was adapted from Kane et al, 2015, pg. 242.

RAISE Data Collection. Multiple assessments were used in the RAISE study to analyze patient characteristics and treatment effectiveness. While most measures were administered at baseline, 6 months, 12 months, 18 months and 24 months, medication information, services utilization and general functioning measures were also collected monthly and quarterly. Demographic information, including age, race, gender, current residence, current occupation and student status were gathered at baseline by the RAISE research team, as were the highest educational level and occupation of the participants and both parents. Psychiatric history and baseline moderators, such as smoking, substance use and prior psychiatric medication were also collected at baseline (Kane et al, 2015).

The Structured Clinical Interview (DSM-IV-SCID) determined or confirmed subject diagnosis and were completed by remote blinded raters, hired by the RAISE researchers. Psychotic symptoms were assessed with the Negative and Positive Syndrome Scale (PANSS), Clinical Global Impressions Scale (CGI), and included the eight variables needed to assess the Working Group Criteria for Remission in Schizophrenia (Andreasen et al, 2005). Substance use was assessed using questions related to DSM-IV substance use criteria. Using researcher developed instruments, the RAISE researchers also assessed current employment, student status and social functioning, (Kane et al, 2015). Quality of Life, one of the outcome variables of the study, was assessed using Heinrich's Quality of Life Scale (QLS)(Heinrichs, Hanlon, & Carpenter, 1984). All measures collected by the RAISE research team and used in analysis for the current study is discussed in more detail below.

Two-year observation period: Implication for Measuring Recovery in the Current Study. Although five-years or more would better capture periods of recovery and medium-term outcomes, participants in the RAISE study were followed for two-years. In this study, it was

expected that few participants (many having recently experienced and been diagnosed with first-episode psychosis) would have experienced full recovery during that time.[11] Therefore, I used scores from the clinical, symptom-based measures to assess clinical *remission*, rather than full recovery, in addition to quality of life, and clinical global functioning.

Missing Data. To retain participants, the RAISE researchers purposely set no threshold for study discontinuation. Thus, strictly speaking, no participants where dropped from the study. However, a substantial portion of the follow-up outcome data being assessed in my study were missing in the RAISE data set. While most participants (68%) had three or more visits, 32% attended only two or fewer of five visits, one of which included baseline (Table 1).

[11] Of related concern, given the low stability of diagnosis for first-episode psychosis (Heslin et al, 2015), diagnoses of RAISE participants could vary over the 2-year period – but RAISE researchers only included a formal diagnosis at baseline. As such, only at the current study does not assess changes to diagnosis as an outcome.

Table 1.

Number of Visits Attended by Participants (n=404)

5 of 5 Visits n (%)	4 of 5 visits n (%)	3 of 5 visits n (%)	2 of 5 visits n (%)	1 of 5 visits n (%)
159 (39.3)	67 (16.5)	49 (12.1)	49 (12.1)	81 (20.0)

As of this writing, the topic of missing follow-up data is specifically addressed in only one of the approximately 12 studies published by the RAISE research team; a study of the effectiveness of supported employment and education in the NAVIGATE program (Rosenheck et al, 2016). To minimize potential biases introduced by the missing data, the RAISE researchers decided to use marginal structuring modeling. Specifically, the lower the expectation of an observation being completed, the higher the weighting that was given to it; similarly, the higher the expectation, the lower the weighting. The researchers acknowledge that implementing this approach would not address all potential sampling biases (Rosenheck et al, 2016). While they acknowledge the missing data as a limitation, they also explain the high rate as typical for "long-term, multi-site, real-world effectiveness studies" of people with schizophrenia (Rosenheck et al, 2016, p. 7). Indeed, study attrition is historically high for large, long-term randomized control trials for schizophrenia (Styczynski, Walsh, Greenberg, & Priebe, 2017). The authors do state that 51% of the sample completed the study, but do not describe in their article how much *data* was missing overall. This key aspect of the RAISE study should have been better explained by the authors.

Here is an overview of the scope of missing data in the variables of interest in the present study. As discussed earlier, the independent variable, "privilege" is conceptualized as race, childhood socioeconomic status and current poverty, and as discussed in detail ahead, measured as race, the Hollingshead Four-Factor Index of Socioeconomic Status score, health insurance type, and the receipt of food stamps and other government assistance. In the RAISE study, as shown in Table 2, all or nearly all participants had data for these variables except childhood socioeconomic status, where only 78% of the participants had data.

Table 2

Number of Records at Baseline for Indicators of Privilege

Privilege Concepts	Privilege Indicators	Frequency	Percentage
Race	Race	404	100%
Childhood Socioeconomic Status	Hollingshead	310	78%
Poverty	Health Insurance	401	99%
	Food Stamps	399	99%
	Gov't Assist	400	99%

The outcome variables (clinical remission, Quality of Life, educational/occupational status, and clinical global functioning) were also missing responses at each follow up date (Table 3). Outcome data for the PANSS, which measures clinical remission, the QLS which measures Quality of Life and the CGI, which measures clinical global functioning, were collected for 403 of the 404 participants at baseline, variously declining to about 50% of participants at 24 months.

Table 3.

Number of Records of Outcome Measures Per Visit for Selected Variables

Outcome Measures	Baseline n (%)	6 Months n (%)	12 Months n (%)	18 Months n (%)	24 Months n (%)
PANSS	403 (99.5)	291 (71.9)	257 (63.5)	221 (54.6)	205 (50.7)
CGI	403 (99.5)	291 (71.9)	257 (63.5)	221 (54.6)	205 (50.7)
QLS	403 (99.5)	292 (72.1)	257 (63.5)	220 (54.3)	205 (50.7)
Edu/Occ	124 (30.6)	112 (27.7)	103 (25.4)	90 (22.2)	93 (23.7)

The RAISE study included indicators of employment and educational enrollment, and upon first review of the Codebook, these appeared adequate to measure this dimension. Only after the database was acquired and data clean-up begun was it discovered that at baseline, 69% of subject responses, and at 24 months, 74%, were missing (Table 3). The missing data imputation method used in this study, maximum likelihood estimation (MLE), is thought to be useful when rates of missing data are high (i.e. >50%) (Collins, Schafer & Kam, 2001), as discussed ahead. However, I decided to not assess education and employment due to the very high missing data rate, and more so because it was unclear if data were missing due to non-response or participants not working or not attending school. Therefore, the research question regarding the impact of privilege on educational and occupational status was not assessed. (Differences between participants who provided data by attending two or less visits and those who attended more are discussed in the Results chapter.)

Overall, it is possible to speculate on some reasons for missing data. The conditions of data collection, including clinical measures done by video assessments, may have contributed in some unknown way. Participants who were doing exceptionally well may have felt the services were no longer needed and decided not to come. It is also possible that participants who continued to worsen may have also missed visits as more intensive services, such as inpatient care, were perceived as necessary. Homelessness, transitory living situations and other issues related to emotional or monetary instability may have also led to missing follow-up data. While the RAISE researchers intentionally chose clinics located in poor rural and urban areas, access to care, a well-researched health disparity related to poverty and race, may have reduced the RAISE researchers' ability to have a reasonably complete data set. Regardless of these and other reasons,

outcome data for many of the participants is missing at all levels of follow-up in the RAISE study.

Ethical Considerations

The current study is a secondary analysis of already de-identified data collected by the RAISE researchers. Use of deidentified secondary data obtained from the NIMH Data Archive Program via UCLA meant that this study was exempt from the IRB process. The RAISE literature, however, indicates that IRB approval was obtained and protocols and procedures for human subject research were secured and maintained at each RAISE research site (Kane et al, 2015). Moreover, the literature also describes the RAISE consent process. Informed consent was secured from adult participants or from the legal guardians of minors, and participants were provided detailed information regarding the informed consent in verbal and written communication. Additionally, the benefits of the study were explained, and participants were informed of the voluntary nature of participation as well as their right to withdraw consent at any time with no consequences to the services provided. Subject confidentiality was also discussed during the RAISE consent process, including coding and security measures for maintaining subject anonymity (Kane et al, 2015).

Variables in the Current Study

Dependent Variables - Recovery Outcomes. The Positive and Negative Symptoms Scale (PANSS), Quality of Life Scale (QLS) and Clinical Global Impressions scale (CGI) were used to assess the outcomes in this study.

Remission in Psychosis. Clinical remission was measured using criteria developed by the Remission in Schizophrenia Working Group (Andreasen, et al, 2005). Remission can be assessed using a variety of symptom-based assessments (Andreasen et al, 2005), however, the PANSS was used in this study. In the RAISE study, data was collected every 6 months, however the

PANSS only assesses symptoms from the previous week, inappropriate to assess the duration of remission during the 6-months between follow-up visits. Therefore, I used the broad criteria of remission as defined by Lally and colleagues (2017), in which symptom reduction is assessed, but not the duration of time spent in remission.

Remission Using the Positive and Negative Symptoms Scale (PANSS). Considered the "gold standard" in the assessment of psychotic symptoms for clinical trials, the PANSS is comprised of 30 items, on a seven-point rating scale that ranges from " 1 = absent" to "7 = extreme." I used a modified version of the PANSS adapted to measure remission by the Remission in Schizophrenia Working Group. Participants who have achieved remission scored a three or higher on eight specific PANSS items:

Positive Scale

- P1. Delusions
- P2. Conceptual Disorganization
- P3. Hallucinatory Behavior

Negative Scale

- N1. Blunted Affect
- N4. Apathetic Social Withdrawal
- N6. Lack of Spontaneity/Flow of Conversation

General Pathology

- G5. Mannerisms/Posturing
- G9. Unusual Thought Content

Though scoring for the Remission criteria ranges from 8 to 56, there is no cut off score for Remission; instead the cutoff is for each of the items. To be in Remission, participants had to score 3 or less on *every* PANSS listed above. PANSS data was collected at all five visits.

Quality of Life. Developed in 1984 by authors Heinrichs, Hanlon and Carpenter, the Quality of Life Scale (QLS) assesses the presence of deficits in functioning and symptoms of schizophrenia within the last 4 weeks. The QLS is a 21-item clinician-rated scale based on the results of a semi-structured clinical interview. Items rated on a 7-point scale (0 - 1 = severe impairment, 5 – 6 = normal/unimpaired functioning). Four separate domains were assessed. Interpersonal relations (items 1 – 8), the first domain, assesses various aspects of social experience and interpersonal relationships, including relationships with family and friends, sexual intimacy, social activities and networking. In the second domain, Instrumental Role Category (items 9 - 12), the role of participant as worker, student or housekeep/parent is captured. Items 13 to 21 assess "Intrapsychic Foundations" or the deficits often defined as the "core of the schizophrenic deficit," and include elements related to cognition, volition and affectivity. The final domain, Common Objects and Activities, evaluates the possession of certain objects and the involvement in certain activities as a marker of community participation (Heinrichs, Hanlon, & Carpenter, 1984). Scores for the QLS range from 0 to 126 and were broken down by the level of impairment. Though the QLS was analyzed as continuous variable, scores from 0-21 indicates severe impairment, 22-63 indicate moderate impairment, 64 to 84 mild impairment and 85 – 126 normal to no impairment. Quality of life data were collected at baseline and all follow-up visits.

Clinical Global Functioning. Developed specifically for research purposes, the CGI was intended to assess overall global functioning of participants participating in NIMH sponsored

clinical trials assessing psychiatric medication (Haro et al, 2003). The CGI-S is 7-point scale that summarizes overall functioning, from the intensity and severity of symptoms, work, home, school and relationships (Haro et al, 2003). Scores range from 1 (normal, no impairment) to 7 (most severely ill patients). Because the PANSS does not assess cognitive or psychosocial functioning, it was felt a global rating of functioning would provide a more complete assessment of subject status. In the current study, CGI scores were also treated as a continuous variable. The CGI was administered at all five visits.

Independent Variable - Privilege. The independent variable, privilege, is an aggregation of multiple variables included in the RAISE study. Race, childhood SES and current poverty were conceptualized individually using multiple items in RAISE, then using latent class analysis, further combined to assess the level of privilege experienced (Table 4). The level of privilege (higher, middle, lower) thought to be associated with the response items is also listed in Table 4, though the privilege groups were ultimately determined though latent class analysis, the results of which are reported in Chapter 4.

Table 4

Privilege Variables, Attributes and Expected Privilege Level

Privilege Variables	Variable Attributes		Expected Privilege Level
RACE			
	White		*higher privilege*
	Black or African American		*lower privilege*
	Hispanic/Latino		*lower privilege*
	Mixed		*lower privilege*
	Other[a]		*lower privilege*
CHILDHOOD SES			
	Hollingshead Four Factor Index of SES[b]		
		highest (score 40 - 66)	*higher privilege*
		middle (score 30-39)	*middle privilege*
		low (8-29)	*lower privilege*
CURRENT POVERTY			
	Insurance		
		private	*higher privilege*
		public	*lower privilege*
		uninsured	*lower privilege*
	Food Stamps		
		No	*higher privilege*
		Yes	*lower privilege*
	Government Assistance (other)[c]		
		No	*higher privilege*
		Yes	*lower privilege*

[a]other = American Indian/Alaska native; Asian; Hawaiian or Pacific Islander. [b]Hollingshead's scores have been collapsed from 5 categories into three, details are discussed below. [c]Government assistance (other) = SSDI, SSI, unemployment, rent supplements, and other disability or welfare benefits.

Race. The RAISE variables "ethnicity" and "race" were used to create the single variable "race" for the current inquiry. Ethnicity in RAISE was conceptualized as a binary variable in which participants identified as "Hispanic or Latino" or "Not Hispanic or Latino." Race in the RAISE study included the categories "American Indian/Alaska Native;" "Asian;" "Hawaiian or Pacific Islander;" "Black or African American;" "White;" "More than one race;" "Unknown or not reported." For the current analysis these were recoded to the following categories: "non-Hispanic White," "non-Hispanic Black or African American," "Hispanic or Latino," "Mixed Race," "Other." "Other" subsumed the categories of "American Indian/Alaska Native;" "Asian;" "Hawaiian or Pacific Islander" due to the low number of participants in these categories (Table 4). Information on race was gathered for all 404 participants at baseline. Participants who identified as "White" were considered to have "higher privilege," while all other categories were considered "lower privileged."

Childhood Socioeconomic Status. Researchers in the RAISE study recorded the highest occupation held by the parents using the name of the position held, as well as the highest level of education achieved by parents[12]. Though the RAISE researchers developed their own coding system for categorizing parent education and occupations into discrete categories, for the purposes of this study, I recoded the original measures, per the Hollingshead Four Factor Index of Social Status (Hollingshead, 1975). This was done to ensure that the current study used a standardized measure of childhood SES which has been already tested for its psychometric properties.

[12] The Hollingshead Index is used to determine social status of family units using measures taken from the parents, but the resulting outcome can be used to determine the social status of the children in the family (Hollingshead, 1975). Though the participants in the study are adults, we are interested in assessing their childhood socioeconomic status, therefore the index is an appropriate measure. In this study, it is assumed that the participants a) lived with the parent or parents they have provided data for and b) are accurately reporting data about their parents.

Developed in the 1970s, the Hollingshead Index remains one of the most widely used measures to assess socioeconomic status of an individual, especially in medical and public health research (Adams & Weaklien, 2011), by looking at parent characteristics. The Index calculates a composite score using education, occupation, employment/retired status and marital status. To assess occupation, the Index includes broad occupational categories that have allowed the inclusion of new occupations not existing when it was developed. According to Adams and Weaklien (2011), Hollingshead's ranking of occupational classifications is viewed as adequate, but not "optimal" (p. 14), however. Formal validation of the scale was conducted by Hollingshead, based on data from the 1970 U.S. Census, raising concerns regarding the current validity of the ranking. Multiple studies have found the measure to have concurrent validity with other measures of social status, but authors have also raised concerns about how the Hollingshead combines occupation and education, which are two related, but distinct dimensions (Adam & Weaklien, 2011).

The first concern posits that measures of social status often stratify social class based on "vertical" scales of occupational prestige and fail to consider characteristics of individual occupations that may be better categorized as horizontal "micro-classes" (Cassedy et al, 2013). In other words, certain occupations may categorically fit into a higher level of status if using the Hollingshead but be perceived as lower in status socially. The second limitation of using occupation and education to delineate social class is the exclusion of income. Though the index assumes that income follows educational and occupational levels, this is not always true (Cassedy et al, 2013). Despite its faults, however, the measure is likely "superior to either education or income by itself" and is still viewed as "indispensable" for many researchers (Adams & Weaklien, 2011, p. 15).

Of the 404 participants tested, 310 had enough information to calculate a childhood SES score and this number was increased using statistical missing data imputation in the final analysis. Hollingshead created five distinct categories of social status based on the calculated composite scores for highest educational level and occupational status of both parents: highest (66-55); high (40-54); middle (30-39); low (20-29); and lowest (8-19) (Table 4). In this study, however, the categories were collapsed: high (66-40), middle (30-39) and low (8-29). Participants who identified as having a high childhood SES were considered to have "higher privilege", those who endorsed middle childhood SES were considered "middle privilege" and those with low childhood SES were considered "lower privileged."

Current Poverty. *(Insurance type, food stamps and other government assistance).* Though the monthly income of the participants was recorded in the RAISE study, approximately 71% of the participants were living with family (of origin or orientation). In the RAISE study, the individual participant's income was collected, not the overall household income. It is thus possible that many participants would be incorrectly identified as living in poverty. Though it could be argued that a person living with their parents qualifies as poor, this study is looking at the relationship between privilege and remission. In this study privilege is not simply income or the financial ability to live on one's own, but also access to the resources that may not be as available to those who were not privileged, including those of one's family. Additionally, much of the data on income was missing at baseline.

Therefore, the concept of current poverty was operationalized using the variables of insurance status, as well as the receipt of food stamps and other government assistance (including Social Security Disability Income, Supplemental Security Income, state or county disability or social welfare, unemployment and rent supplements) (Table4). A preliminary

analysis conducted indicated that these combined variables more clearly differentiated levels of privilege than did participant income

Insurance Type. Insurance data were collected during the RAISE study from 401 of the 404 participants at baseline. Researchers asked them to identify their insurance status as "private," public," or "uninsured" (Table 4). In this study, I considered private insurance "higher privileged," and both public insurance and uninsured as "lower privileged."

Insurance Type and Poverty. According to the 2011 *Income, Poverty, and Health Insurance Coverage in the United States Current Population Reports*, in 2011, approximately 64% of the population in the U.S. purchased private insurance, and about 31% obtained public insurance through Medicare, Medicare or military health insurance (DeNavas-Walt, Proctor, & Smith, 2012). The authors reported that 15% of the population was uninsured in 2011, indicating that some of the population changed insurance types during the year. RAISE study participants differed substantially from the general population; 24% reported having private or public insurance, while most subjects (52%) reported they were uninsured. The type of insurance obtained is often associated with SES.

Private insurance is available through employers and direct purchase and is often cost prohibitive for the unemployed or those in jobs where insurance is unavailable or not affordable (Blumenthal, 2006). Public insurance programs were created with the intention of helping low income and other vulnerable populations procure the health care they need, even when private insurance is not possible. Medicare and Medicaid, the two main types of public insurance, are requirement based. Medicare provides health care to people 65 and older, regardless of income. Medicaid, on the other hand, provides health care to people who have a very low income and/or are "medically needy" (US Centers for Medicare & Medicaid, n.d.). Because public insurance is

based on need, participants with this type of insurance would be considered "lower privileged" as they were likely lower income, but also service connected.

According the U.S. Census, the lower the economic status, the more likely an individual or family is likely to have no health insurance (DeNavas-Walt, Proctor, & Smith, 2012) . According to U.S. Census Bureau data, in 2011, approximately 46% of people in low income households (<$25,000 or less to $49,000 annual income) had no health insurance, compared to approximately 21% of those with an annual income of $25,00 to $49,999. Rates were higher for those who make $50,000 to $74,999 with 15.9% uninsured, while only 7.8% of those who make over $75,000 were uninsured (DeNavas-Walt, Proctor, & Smith, 2012). Estimates from the National Health Interview Survey were similar, in 2011, around 40% of those who were considered poor or near poor were uninsured compared to a little over 10% in those who were not poor[13](Cohen & Martinez, 2015). Participants who were uninsured were categorized into the lowest privileged group.

Food Stamps. RAISE collected food stamp data at baseline from 399 participants using the question "In the past 30 days, have you had any financial support from food stamps?" Answers included "Yes," "No," and "Unknown." An answer of "No" was categorized as "higher privilege," while an answer of Yes indicated "lower privilege" (Table 4).

Food Stamps and Poverty. Obtainment of food stamps is based on economic need. For example, the Supplemental Nutrition Assistance Program (SNAP), the largest nutrition program administered by the Federal government, requires the monthly income of the individual or family must be at or below 130% of the federal poverty level for eligibility (U.S. Department of

[13] People considered "poor" are have incomes below the poverty line, while "near poor" indicates incomes of 100 to 200% less than the poverty threshold. Those considered not poor have incomes 200% or greater than the poverty threshold.

Agriculture, 2018). I am assuming that participants who have reported receiving food stamps are low income and likely living below the poverty level and thus I categorized them as "lower-income".

Government Assistance. In the RAISE Study, data was collected on other forms of government assistance; however, a relatively small number of participants had obtained services other than food stamps at baseline. Therefore, in the current study, the data on government assistance other than food stamps were combined into one data point – whether the participants had received *any* government assistance, other than food stamps, at baseline (Table 4). RAISE measurements included items related to receipt of social security disability insurance (SSDI), supplemental security income (SSI), unemployment, rent supplement and "other disability or social welfare benefits - state or county VA." Participants who received any type of government assistance were considered "lower privileged." In the RAISE study, 400 participants had complete data on government assistance (SSI, SSDI, unemployment, rent supplement and other benefits including food stamps).

Government Assistance and Poverty. Eligibility for benefits such as SSI, SSDI, and rent supplements are based on the economic need of the individual or family and eligibility requirement are often more stringent than those to obtain food stamps. For instance, to qualify for SSI benefits in 2018, one must be aged, blind or disabled, but total resources and income cannot be worth more than $200 for a child or individual and $3000 for a couple (Social Security Administration, 2018a). The receipt of SSDI benefits relies on low income and assets, but also a recognized and proven medical disability. Benefits received are based on work credits earned during regular employment (Social Security Administration, 2018b). While eligibility criteria can change based on program, in general those who receive rental supplements are considered

low income (Center on Budget and Policy Priorities, 2017). According to the Center on Budget and Policy Priorities (2017), 2/3 of renters obtaining benefits from rental assistance programs meet the criteria for "extremely low" income, in which income does not exceed 30% of the local median or federal poverty line.

Receipt of unemployment benefits by itself does not necessarily indicate economic hardship of an individual or family. Recent evidence indicates, however, the effects of short- and long-term unemployment are far reaching and are not necessarily resolved once employment resumes (Brand, 2015). Loss of employment can lead to short term financial distress as well as long-term economic issues, such as the inability to pay for bills and food, loss of savings, potential homelessness or displacement, and the interruption of career trajectories (Brand, 2015; Price, Choi, Vinokur, 2002). In the context of the current study, those who were unemployed were also study participants with a diagnosed mental illness, likely making the loss of income more substantive. Because SSI, SSDI, rent supplements and unemployment are associated with economic need, participants receiving any assistance were considered "lower privileged."

Covariates. The literature was used as a guide to decide which variables to include as covariates and marital status, diagnosis and treatment type were identified. A strength of multilevel modeling is the ability to evaluate the impact of individual indicators on each dependent variable. Accordingly, MLM was also used to assess the impact of each covariate on each dependent variable.

Marital Status. People diagnosed with psychotic disorders are less likely to marry and they have higher rates of divorce (Agerbo, Bryne & Eaton, 2004; Nyer et al, 2010; Thara & Srinivasan, 1997). Marital status has long been thought to influence functional and clinical outcomes in psychotic disorder. Positive effects associated with marriage also include higher

socio-economic status, better Quality of Life, and less suicidal ideation than those who were divorced or single (Nyer et al, 2010; Salokangas, Honkonen, Stengård, & Koivisto, 2001). Conversely, non-married status in schizophrenia appears to be related to a variety of undesirable clinical characteristics, including depression (Thara & Srinivasa, 1997), poorer prognosis (Farina, Garmezy, & Barry, 1963; Salokangas, 1997), as well as increased suicidality (Harkavy-Friedman et al, 1999) and hospitalizations (Sanguineti et al, 1996). Those who are unmarried may also be at higher risk for violence (Fresán et al, 2005), decreased quality of life (Cardoso et al, 2005), and social disability (Ganev, 2000).

Marital status has also been studied in relation to long term outcomes. In 1936, psychiatric researcher Benjamin Malzberg (1936) noted that after age standardization, first episode admission rates for single males was 5.4 times greater than for those who were married. Malzberg (1936) rationalized that the impact of marital status was bidirectional. Those who experienced better pre-morbid adjustment were more likely to be married (and stay married), but were also more likely to have positive outcomes, including higher rates of remission and recovery, and recent studies have supported this theory (Agerbo, Bryne & Eaton, 2004; Farina, Garmezy, & Barry, 1963; Malzberg, 1936; Nyer et al, 2010; Salokangas, Honkonen, Stengård, & Koivisto, 2001). While much of the recent research shows that marriage is positively associated with measures of remission, as well as functional, clinical and vocational recovery, the effect appears to be relatively small (Agerbo, Bryne & Eaton, 2004; Alverez-Jimenez et al, 2012; Rosen & Garety, 2005; Verma et al, 2012) and in some cases depends on other variables (Emsley et al, 2006). Because marital status directly impacts measures of quality of life and remission, it was included as a covariate, despite the relatively small number of overall RAISE participants who were married at baseline (11%).

Diagnosis. Evidence has consistently indicated that overall, schizophrenia has worse outcomes than the other psychotic disorders, including schizoaffective disorder. For example, in a longitudinal study comparing outcomes of patients diagnosed with schizophrenia to those with schizoaffective disorder, Harrow and colleagues (2018) found that over a 10-year period, those with schizophrenia had poorer clinical outcomes than those with schizoaffective disorder. Means scores for the Levenstein-Klein-Pollack scale, a global measure of symptoms, hospitalizations, life adjustment, social support and vocational and social functioning developed in 1966, were higher for the subjects with schizophrenia than for those with schizoaffective disorder (depressed or manic type) at all four follow-up periods and significantly higher than schizoaffective disorder at the 7.5- and 10-year follow-up periods ($P<0.05$) (Harrow, Grossman, Herbener & Davies, 2018).

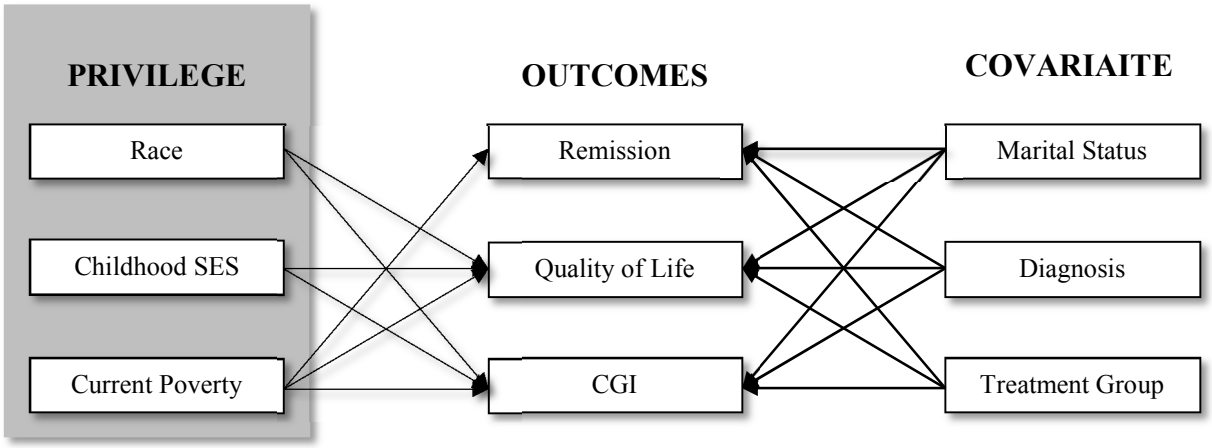
Some of the diagnoses included in RAISE can be considered 'holding places' of sorts until further clinical information was obtained. According the DSM-IV-TR (American Psychiatric Association, 2000), the diagnostic manual used in the RAISE study, patients with schizophreniform disorder meet all criteria for schizophrenia but only for a duration of 1 to 6 months, while a diagnosis of Brief Psychotic Disorder meets the criteria for less than a month The final diagnosis included in the RAISE study was Psychotic disorder NOS, a category which is defined in the DSM-IV-TR by the lack of adequate information in which to make another diagnosis. Because it is possible that some subjects had better outcomes due to diagnosis, rather than demographic or other clinical characteristics, diagnosis has been included as a covariate.

Treatment Group. RAISE researchers summarized their study's results in a 2015 publication (Kane et al., 2015). Kane et al. indicated that participants in the experimental treatment, NAVIGATE (n = 223), stayed in treatment longer (23 months versus 17 months,

$p<0.004$) received more key services ($p<0.0001$ for supported employment, resiliency training, decision support and family psychoeducation), and received more mental health services monthly than those receiving community care as usual (n = 181) (4.53 services vs. 3.67 services). In terms of clinical outcomes, Kane et al. (2016) also reported that both Quality of Life and PANSS scores improved significantly, statistically and clinically, for those in the NAVIGATE program ($p<0.02$ for both), but there were no differences on CGI scores. When duration of untreated psychosis was included as a control, however, effect sizes were altered substantially, although both remained statistically significant. For those with ≤74 weeks of untreated psychosis compared to those with >74 weeks (74 weeks being the median duration as reported by Kane et al.), the effect size was .54 compared to .07 on the QLS, and was .42 compared to .13 on the PANSS scores. Despite the substantially larger effect size for both PANSS and the QLS when a longer duration of untreated psychosis occurred, the results were statistically significant and as such, treatment group is treated as a control in this study.

Relationships Between Privilege, Outcomes and Covariates. The hypothesized relationships between the individual components of the independent variable, privilege (race, childhood socioeconomic status, current poverty), dependent variables and the covariates can be seen in Figure 5. According to the literature review in this and preceding chapters, in this study race and childhood socioeconomic status were hypothesized to impact quality of life and clinical global functioning. Current poverty is thought to impact remission, quality of life and clinical global functioning . Additionally, the covariates marital status, diagnosis and treatment group were hypothesized to impact remission, quality of life and clinical global functioning.

Figure 5. Relationships Between Privilege Components, Outcomes and the Covariates



Analytical Steps

After assessing whether there were any issues with the data, such as patterns of missingness, outliers, and multicollinearity, I conducted two separate types of inferential analysis to answer the primary research questions for this study: latent class analysis (LCA) and multilevel modeling (MLM). I used LCA to identify whether there were distinct privilege groups and to examine the characteristics of these groups. Then, I used multilevel modelling (MLM) to investigate how privilege group membership may have influenced different outcomes and how these outcomes may have changed across time. Below, I provide an overview of the analytic steps and a detailed discussion of LCA and MLM. All statistical analyses were conducted in R, with built-in R code for basic analyses (e.g., correlations, means, standard deviations), the "poLCA" package for LCA (Linzer & Lewis, 2011), and the "lme4" package for MLM (Bates, Mächler, Bolker, & Walker, 2014).

Data Screening. First, I screened the data to identify any potential problems for subsequent analyses. Each analysis I conducted assumed that the continuous variables were (1) univariate and multivariate normal, (2) free from univariate and multivariate outliers, and (3) free from collinearity (Ullman, 2012). To examine univariate distributions and possible univariate outliers, I reviewed descriptive statistics for each continuous variable (see Tables 5 - 8). Specifically, I examined the skew of each continuous variable and whether any observations were greater than |3| standard deviations from the mean (Tabachnik and Fidell, 2019). I also visualized bivariate relationships between variables to identify possible outliers. Second, to investigate potential multivariate outliers, I calculated the Mahalanobis distance with expectation-maximization for missing observations (Wicklin, 2012). Then, I examined both the χ^2 values associated with Mahalanobis distance and visually examined the distribution of scores to determine a possible visual cut-off. Third, I examined bivariate correlations between each

variable to identify any cases of collinearity (defined as > .80), which would be problematic for inferential analyses (Yu, Jiang & Land, 2015).

To handle missing data, I first investigated whether there were patterns of missingness. For both the LCA and MLM, I used maximum-likelihood estimation, which is included in the "poLCA" (Linzer & Lewis, 2011) and "lme4" packages (Bates et al., 2014). Maximum likelihood estimation is robust to data that are missing at random, but can be problematic when there is a pattern of missingness related to the variables themselves (e.g., data that were more likely to be missing from a control condition than an experimental treatment). Therefore, I examined tabular summaries of data to identify any patterns and conducted Little's "Missing Completely at Random" test (Little, 1988).

Latent Class Analysis. Latent class analysis (LCA) is a statistical method used to identify homogenous, mutually exclusive groups characterized by patterns of responses to individual unobserved variables, from heterogenous populations (Collins & Lanza, 2010; Laska et al, 2009). LCA identifies unobservable, or "latent", subgroups based on a set of statistically dependent, often discrete, observed variables, or indicators. Though analogous in technique to factor analysis, LCA was developed to include categorical variables with multinomial distributions, as factor analysis only includes normally distributed, continuous variables (Collins and Lanza, 2010; Ruscio & Rusico, 2008). Created for the social sciences because it looks at the qualitative differences between people, LCA is considered a person-centered approach, in that it identifies mutually exclusive categories of participants based on shared characteristics (Ruscio & Rusico, 2008). In this study, I hypothesized that different levels of privilege impact outcomes differently, and therefore sought to identify meaningful privilege classes using the observed variables for race, childhood socioeconomic status and current poverty (described on pp. 83 –

91). Selection of these indicators was based on the literature I reviewed in Chapters 1 and 2, suggesting their key role in defining privilege, as well as the availability of sufficient data in the RAISE data set.

After identifying which indicators to include in the analysis, I used the "poLCA" R package to fit a series of LCA models that could include from 1 to 5 classes (Linzer & Lewis, 2011). To determine which model (i.e., how many classes) to retain, several pieces of information were considered. Specifically, I examined the Akaike Information Criterion (AIC), the Bayesian Information Criterion (BIC), the sample-size adjusted BIC (BIC*), the likelihood ratio statistic (G^2), the entropy value, and the item-response probabilities and the interpretability of the classes in each model. The AIC, BIC, and BIC* are all widely accepted measures of model fit but perform slightly differently from one another under different circumstances. Traditionally, models with lower AIC, BIC, and BIC* values are preferred. The G^2 value was used as an additional test of model fit, with the general rule of thumb that a G^2 value lower than the model's degrees of freedom is considered a good fit (McCutcheon & Hangenaars, 2009). I also examined the entropy value to determine how clearly people were classified into their respective classes, (Hancock, Harring & MacCready, 2019). Entropy values provide the percentage of the time individuals are correctly identified into the latent groups. A value of 0.8 means that 80% of the time participants were correctly classified (Clark & Muthén, 2009). This value is considered "reasonably high," though numbers closer to zero are desirable (Kamater, Kara, Patarapichayatham, & Lan, 2018, p. 11).

However, reliance on fit indices is often not sufficient for LCA, since they may not be in agreement regarding which model to retain. These indices can perform differently under certain circumstances and may over- or underestimate the number of classes present (McCutcheon &

Hangenaars, 2009). Therefore, I examined item-response probabilities for each model in terms of their interpretability and distinctness of the classes (Porcu & Giambona, 2017). For example, all else being equal, a 2-class model would be preferred over a 3-class model if the additional class did not appear to have a distinct set of item-response probabilities that define it. In addition, I considered both previous literature and theory when deciding on the number of classes and interpreting the distinct privilege groups in each model (McCutcheon & Hangenaars, 2009).

Multilevel Modeling. In order to account for the nested structure of the data (measurement occasions nested within participants), I used a two-level MLM to assess the relationships between privilege and the study outcomes over time. Multilevel modeling can be described as a complex form of ordinary least squares regression (OLS), but unlike OLS, MLM is appropriate for testing and managing statistically dependent data. Parameter coefficients derived from nested or statistically dependent data violate assumptions of independence and can artificially inflate estimates if using OLS, leading to false positives (i.e. Type 1 error). Multilevel modeling also addresses differing patterns of associations between variables as they may vary in valence and/or magnitude, depending on which level of analysis is under consideration. For example, the relationship between typing speed and frequency of errors may be positive within-person (e.g., the faster a person types, the more errors they make), but negative between-person (e.g., people who type faster may be better at typing, and make fewer errors compared to those who type more slowly). One of the benefits associated with MLM is that it allows for the identification of patterns within and between the privilege groups, as well as testing interactions between predictors and time (repeated measures) (Hesser, 2015).

Unlike repeated measures ANOVA which emphasizes the quantitative differences between time points, MLM emphasizes patterns of change and as such, has the ability to asses

both group and individual behavior as well as differences between individuals and groups. MLM was chosen because it is also useful for describing nonlinear relationships in longitudinal datasets with more missing data (Krueger & Tian, 2004). In the RAISE dataset, participants were kept in the study regardless of whether they were able to attend all or only one study visit, and as described earlier, this resulted in large amounts of missing data.

Modeling Structure. In this analysis, time (represented as visit measures, BL, 6 months, 12 months, 18 months, 24 months) was nested within individuals, therefore, times were modeled at level 1 and individual measures were modeled at level 2 for all study outcomes. In other words, a two-level model with Gaussian distribution and maximum likelihood estimation was used to model the relationship of privilege, outcomes and time. The dependent variables (outcomes) were Remission, Quality of Life and Clinical Global Functioning. At level 1, the independent variable is time and at level 2, privilege and the covariates (marital status, psychiatric diagnosis and treatment group). Within person effects were estimated at level-1 and between person effects were estimated at level-2.

In this study, within-person estimates provided data on how the dependent variables changed over time together with the other dependent variables. Time was scaled to represent years and was centered at baseline (e.g., 6 months = 0.5). The primary questions in this study were answered at level 2, as between-person estimates provided findings explaining how the different privilege groups differed from one another overall and over time. With the covariates added to the model, between-person estimates also explained how each control variable impacted each of the dependent variables, both overall and over time.

Multilevel Modeling Procedures. Fitting the null model is the first step in the multilevel modeling. It is also referred to as the unconditional growth model as it includes no predictors

(privilege, covariates) to condition the analysis other than the temporal prediction of time (i.e., "growth") (Hesser, 2015). In this model, the slope was fixed, and both a fixed and random intercept were estimated. In particular, the random intercept allows the model to control for nestedness in the data, by allowing a unique intercept to be estimated for each participant. This allows for control of the Type 1 error rate and adjusts for the fact that observations were not entirely independent (Hesser, 2015).

The primary goal of this study, however, is to determine whether observations about people in higher levels of privilege change at a different rate than those about people with lower privilege. Thus, the model needed to include a predictor variable representing the different conditions or privilege levels. Once conditions were added to the model it became a conditional growth model, as the fixed and random effects were now "conditioned on" the predictors. Conditional growth models account for heterogeneity in growth trajectories by allowing intercepts and slopes to vary across individuals (Hesser, 2015). Including the predictor privilege in the model helped explain how the different privilege groups varied from one another regarding the outcomes overall and over time when compared with the unconditional model. When covariates were then added to the conditional model, findings explained how the groups differed by marital status, psychiatric diagnosis and treatment type overall and over time.

Simple effects were calculated to provide additional information on the effects of specific study variables. Described as the effect of one independent variable within the level of a second independent variable, an analysis of simple effects provides information that helps to better understand variable relationships (Howell, 2012). In this study, simple effects analysis provided the mean score and the change to the mean score over the two-year period for each privilege group, independent of any other variable. For the models with covariates, simple effects analyses

were also conducted for any significant interactions between time and any of the covariates. Additionally, using coupling models, I also examined how the outcome variables changed together over time. Coupling models are multilevel models that include time and a person-mean-centered predictor (i.e., a predictor variable centered around a person's mean score), which allow for modeling of within-person associations between the predictor and dependent variable (Hoffman, 2015). In other words, these models allow a researcher to examine whether higher or lower than average scores on a predictor at a given time point are related to higher or lower than average scores on the dependent variable.

The final steps in the analysis were to determine effect sizes for all outcomes using pseudo R^2 and raw, unstandardized coefficients. Though there is no consensus on what the best measure of effect size is on MLM, these measures are often reported in the literature. Pseudo R^2 provides an indication of the amount of variance explained for by the conditional model compared to the unconditional model. In other words, this indicates how much variance is explained by the added predictors (e.g., privilege). Pseudo R^2 values can be calculated for either level-1 (within-person) or level-2 (between-person) variance in each model (Anderson, 2012). ICC values were also calculated and reported. ICC values closer to 1.00 indicate that the variable was more 'trait-like', while values closer to 0 indicate the variable was more 'state-like'. Variables that do not change much within-person tend to have higher ICC values (e.g., personality), while variables that fluctuate more often (e.g., subjective well-being) tend to have lower ICC values." Raw, unstandardized coefficients (statistically significant path coefficients) are reported to indicate how much difference exists between privilege groups for each dependent variable based on the units of measurement in the original scale.

CHAPTER 4
RESULTS

Descriptive Characteristics of Sample

Socio-Clinical Participant Characteristics. The socio-clinical demographic characteristics of the participants are displayed in Table 5 and 6. At baseline, the average age of the participants was 23.4 years and average duration of untreated psychosis was 194 days[14], with a range of 1 to 1456 days. The sample was also primarily male (73%) and at baseline, most participants had never married (89%) and were living at home with family (71%). At baseline most participants had a high school degree (33%) or attended high school but did not obtain a diploma (31%), and 26% had an associate degree, technical school certification or attended college, but did not obtain a four-year degree.

Missing Data - Participant Characteristics. As can be seen in Tables 5 and 6, participants that attended two or less follow-up visits differed only slightly from the study participants as a whole. These participants were similar to the overall sample in age, gender, educational level, marital status and levels of privilege, but varied somewhat by race. They were also more likely to be white, black or other. In the original sample, 43% of the participants were white, compared to 50% of white participants that attended 2 or fewer visits. Blacks/African Americans comprised 34% of the original sample but made up 43% of those who attended 2 or fewer visits. Hispanic participants all attended 3 or more visits, while most participants who identified as "other" (13 out of 19 participants) were seen 2 or less times (Table 5). Though consistent with the literature, where minority status has been long been associated with attrition in psychiatric studies (Fischer, Dornelas, & Goethe, 2001), it also means less minority group

[14] Duration of untreated psychosis prior to study entry, taken at baseline

members in the follow-up visits. Because race is the one of the indicators of the variable privilege, this could potentially skew the results.

The participants who attended 2 or less visits varied little clinically as well; although fewer of them were diagnosed with schizophrenia (47% vs 53%) and more with schizoaffective disorder (24% vs 20%) or psychotic disorder NOS (11% 9%), the differences are small (Table 6). Finally, very few differences appeared between participants with three or more visits and participants with fewer visits in terms of which treatment they received, community care or NAVIGATE.

Table 5

Sociodemographic Characteristics of Sample at Baseline

	Total Sample (n = 404)		Participants w ≤2 Visits (n = 167)	
	n	*%*	*n*	*%*
Age				
14 - 17 years	24	6	5	3
18 - 25 years	274	68	115	70
25 - 39 years	102	25	44	27
Over 40	2	0	1	1
Total	402	100	166	100
Average age	23.4 yrs		23.1 yrs	
Gender				
Male	293	73	119	71
Female	111	27	48	29
Total	404	100	167	100
Race/Ethnicity (recoded)				
White	173	43	83	50
Black/ African American	139	34	71	43
Hispanic/ Latino	45	11	0	0
Mixed Race	28	7	0	0
Other	19	5	13	8
Total	404	100	167	100
Education level				
Some post-graduate training, no degree	5	1	3	2
Completed college, 4-year degree	15	4	8	5
Some post-secondary school/associate/technical degrees	105	26	46	28
Completed high school, diploma	133	33	55	33
Attended high school, no diploma	125	31	50	30
Completed 8th grade, no high school	14	3	3	2
Attended grade school, not 8th grade	6	1	2	1
Total	404	100	167	100
Marital Status				
Never married	358	89	153	92
Presently married	24	6	8	5
Divorced/Widowed/Separated	22	5	6	4
Total	404	100	167	100

Table 6

Clinical Characteristics of Sample at Baseline

	Total Sample *(n = 404)*		**Participants w ≤2 Visits** *(n = 167)*	
	n	*%*	*N*	*%*
Diagnosis				
Schizophrenia	215	53	79	47
Schizoaffective – Bipolar and depressed types	81	20	40	24
Schizophreniform -provisional (<6 month) and definite	68	17	29	17
Brief psychotic disorder (<1 month)	2	0	0	0
Psychotic Disorder Not Otherwise Specified	38	9	19	11
Total	404	100	167	100
Treatment Type				
Community Care as Usual (CC)	181	45	79	47
Experimental Condition (experimental treatment)	223	55	88	53
Total	404	100	167	100

Data Screening

Univariate and Multivariate Distributions of Variables. First, I examined the univariate distributions for each variable. Most variables were categorical and not assumed to be normally distributed; only *Clinical Global Functioning* and *Quality of Life* were continuous. I examined the skewness and kurtosis of these variables, and visually inspected their univariate distributions for each time point, since tests of normality are known to be overly sensitive to minor deviations from the normal distribution (Tabachnick & Fiddell, 2019). None of the skewness values exceeded ±0.40, no kurtosis values exceeded ±0.70, and a visual inspection suggested that each of these variables was reasonably normally distributed. To test for multivariate normality, I used Mardia's tests of multivariate skewness and kurtosis for each of these variables across all time points (Mardia, 1970). Neither the test of skewness (p = .440) or kurtosis (p = .551) was significant, suggesting the data met the assumption for multivariate normality.

Screening for Univariate and Multivariate Outliers. Next, I examined the data for univariate and multivariate outliers. For the continuous variables, none of the scores was greater than ±3 standard deviations from the mean, suggesting the absence of univariate outliers. To test for multivariate outliers, I used Mahalanobis distance. I included categorical variables by using orthogonal contrast codes for each variable. Mahalanobis distance requires complete data, so missing data were first imputed using expectation maximization with the Amelia II package in R (Honaker, King, & Blackwell, 2011). This imputed data was used only for assessing multivariate outliers, and not for the primary analyses. Results indicated five multivariate outliers at the $p <$ .001 level. However, for these five participants, scores on each variable were plausible, and three of the participants were visible minorities. Therefore, I decided to retain these participants for the analysis.

Testing for Multicollinearity Among Variables. To test for multicollinearity, I examined bivariate associations among the variables. Specifically, I examined the bivariate associations between the continuous variables at all time points, and the categorical variables using orthogonal contrast coding. There were no correlations greater than ±0.80, suggesting the absence of collinearity.

Investigating Potential Patterns of Missing Data. Finally, I investigated whether there were patterns of missingness in the data. Specifically, I used Little's MCAR test to determine whether data were missing completely at random. Results suggested the data were missing completely at random, $\chi^2(267) = 291.5$, $p = .145$. Despite this, around one in five participants ($n = 83$) had only baseline scores for the *Clinical Global Functioning*, *Quality of Life*, and *Remission* variables, and appeared to drop out of the study after the first measurement occasion. Therefore, I examined whether these 83 participants were different from the remaining 321 participants on any of the study variables. First, I conducted chi square contingency tests to determine whether these groups of participants significantly differed on any categorical variables, and then applied *t*-tests for potential differences on continuous variables. With the exception of *Treatment Condition*, all tests were nonsignificant, which suggests no conceptually meaningful differences between the two groups of participants (all *p*s > .20). For *Treatment Condition*, a significant effect indicated that participants who were in the control condition (community care) for the RAISE study were significantly more likely to drop out of the study after the baseline measurement, $\chi^2(1) = 4.2$, $p = .040$. In other words, participants in the treatment condition were more likely to provide at least one more measurement occasion after baseline (58% of participants) than were participants in the control condition (42%). However,

since this variable is included as a covariate in the primary analyses, I did not anticipate this missing data pattern influencing the results in any meaningful way.

Latent Class Analysis.

In my analysis, 1-, 2- , 3-, 4- and 5-class LCA models were assessed (Table 9). A review of fit indices resulted in mixed findings. Though the AIC (3334) and the BIC* (3360) was lowest for the three-class, the BIC* was lowest for the four-class (3349) and entropy was the highest for the five-class (0.72). The likelihood ratio statistic (G^2) suggests that the three, four and five-class models all fit well (Table 7). Because the fit indices did not consistently point to a class model, I also determined the number of classes using theory, previous evidence from the existing literature and the interpretability of the results.

Table 7

Determining Latent Group Classes Through Model Fit Indices

No. of Classes	Model Fit LCA							
	AIC	BIC	BIC*	LogL	G^2	df	smallest class size (n)	entropy
1	3470	3510	3479	-1725	295.8	169	-	-
2	3375	3459	3392	-1666	190.8	158	112	0.68
3	**3334**	3462	**3360**	-1635	**140**	147	94	0.61
4	3327	**3349**	3362	-1620	**113.8**	136	43	0.6
5	336	3552	3380	-1614	**103.9**	125	39	**0.72**

Note. AIC = Akaike information criterion; BIC = Bayesian information criterion (BIC); BIC* = sample-size adjusted Bayesian information criterion; logL = log likelihood; df = degrees of freedom

For this study, I determined that the most appropriate choice would be the 3-class model. In addition to fitting several of the indices, the three-class model also fit best with my a priori assumptions regarding privilege (e.g. that there would be a class that had higher privilege as well as a class or classes that were lower privilege). Additionally, though the two-class group also clearly differentiated a higher-class group and was supported by one of the indices, the three-class group also differentiated the groups based on characteristics that were important to this study and supported by the literature. Specifically, the three-class group differentiated the two lower class groups based on insurance type and receipt of services. Having public insurance, being uninsured and receipt of benefits are associated with poverty, as discussed above, but they have also been associated with a variety of negative outcomes related to recovery or outcomes that can help the recovery process (Omary, 2019; Khaykin, Eaton, Ford, Anthony & Daumit, 2010). Those without insurance, for example, are less likely to utilize community-based services and more likely to use emergency or crisis services, while those with public insurance are often limited in where they can be seen, what treatments are available and the duration of time covered (Shied, 2016). Specific characteristics of the three privilege groups are discussed below.

Latent Class Groups. With a review of final class counts and probabilities based on the participant's likely latent class membership, I identified three latent class privilege groups, defined by the item probabilities seen in Table 8.

Higher Privilege Group. This group included 111 participants, who were much more likely to be white (61%) than the lower privilege group (31%) and the lower privilege with benefits group (39%). They were also strikingly more likely to have a high childhood socioeconomic status (70%) than the middle (24%) and lower privilege (34%) groups. Compared to the middle privilege (33%) and lower privilege (38%) groups, participants in the

higher privilege group had a substantively lower probability of having lower socioeconomic status (6%). The higher privilege group was also less likely to receive benefits of any type. While the probability of having private insurance in the higher privilege group was 63%, none of the participants in the middle and lower privilege groups had private insurance. Finally, the highest privilege group had the lowest probability of receiving food stamps (13%) or any other type of government assistance (11%) than the other privilege groups. In summary, participants in the higher privilege group were more likely to be white, have a higher childhood socioeconomic status, and were less likely to be currently living in poverty.

Middle Privilege Group. This group included 199 participants described as lower privileged but not connected to services and benefits. As seen in Table 8, the probability of being of minority or mixed race is 69% for the middle privilege group, compared to 39% for the high privilege group and 62% the lower privilege group. The probability of having middle childhood socioeconomic status level is noticeably higher for the middle privilege group (43%) compared to the higher (24%) and lower privilege groups (28%). In terms of insurance, the middle privilege group has the highest probability of being uninsured (77%) compared to the higher privilege group (33%) and the lower privilege group (20%). Additionally, the probability of receiving food stamps was substantially lower for the middle privilege group (26%) than the lower privilege group (64%), though higher than the higher privilege group (13%). Finally, the middle privilege group had a substantially lower probability of receiving benefits (3%) than the lower privilege group (63%) and a slightly lower probability than the higher privilege group (13%). To summarize, participants in the middle privilege group were more likely to be of color, middle socioeconomic status, uninsured and less likely to receive benefits.

Lower Privilege Group). Probabilities for the 94 participants in the lower privilege with benefits group can be found in Table 8. In terms of minority or mixed-race status, the lower privilege with benefits group (62%) had a somewhat higher probability than that of the lower privilege group (69%), though both were considerably higher than the higher privilege group (39%). These participants also differed in terms of childhood socioeconomic status; the lower privilege groups had the highest probability of a low status (38%), compared with the higher (6%) and middle privilege group (33%). Lower privilege participants had the highest probability of having public insurance (80%) compared to the high privilege group (4%%) and middle privilege groups (20%) and the rest of the group were uninsured (20%). The lower class with benefits participants also had a much higher probability of receiving food stamps (64%%) then the middle privilege group (26%) and the higher privilege group (13%). This pattern also held for the receipt of any government assistance; participants in the lower privilege group also had a substantively higher probability of receiving any other type of government assistance (63%) than either the middle privilege group (3%) or the higher privilege group (11%). In summary, participants in the lower privilege with benefits group were also more likely to be of minority or mixed race status, like that of the middle privilege group, but were more likely to have a low childhood socioeconomic status, have public insurance and receiving food stamps and other benefits.

Table 8

Interpreting Latent Class Groups using Probabilities

	Class Probabilities		
	Class 2 (higher)	Class 1 (Middle)	Class 3 (Lower)
Observed Variables	*n* = 111	*n* = 199	*n* = 94
(Indicators)	%	%	%
Race			
White	61*	31	39
AA/Black	19	41*	44
Hispanic/Latino	8	14*	10
Mixed	0	14*	4
Other	12	0	4
Childhood Socioeconomic Status			
Hollingshead Four Factor Index of SES Categories[a]			
High	70*	24	34
Middle	24	43*	28
Low	6	33	38*
Current Poverty			
Insurance Type[b]			
Private Insurance	63*	0	0
Public Insurance	4	23	80*
Uninsured	33	77*	20
Food Stamps[b]			
No	87*	74*	36
Yes	13	26	64*
Government Assistance (other)[b]			
No	89*	97*	37
Yes	11	3	63*

[a]Hollingshead categories are the indicators for childhood socioeconomic status as measured by parental educational and occupational status in the latent class analysis. [b]Insurance type, food stamps and government assistance were the indicators for current poverty. In the table, * indicates highest probability for each of the observed variables in its latent class group.

Categorical Outcomes by Privilege Status

The following section provides a descriptive summary of Remission, Quality of Life, and Clinical Global Functioning scores in the data. This section is intended to be a supplement to the MLM section, as a way to further depict trends in the data. However, this section is purely descriptive, with all inferential analyses conducted and reported in the MLM section.

Remission Status by Privilege Group. As seen in Table 9 a simple frequency count of dichotomous Remission outcomes (Remission, not in Remission) indicates that a slightly higher percentage of participants in the higher privilege group were considered in Remission at baseline (14%) compared to the lower privilege group (9%). The higher privilege group had the highest percentages of participants in Remission at all visits and the lower privilege group had the lowest percentage of participants in Remission at all visits. When compared to the total sample, the higher privilege group also had a larger percentage of participants in Remission at all visits (Table 9). At 24 months, 46% of the high privilege group met the criteria for Remission, compared to only 31% of the middle privilege group and 13% of the lower privilege group.

Table 9

Categorical Remission Outcomes by Privilege Level and Visit

Privilege Group	Remission Status	Baseline		6 Months		12 Months		18 Months		24 Months	
		n	%	n	%	n	%	n	%	n	%
Higher Privilege											
	No Remission	95	86	53	62	50	68	38	60	34	54
	Remission	16	14+	32	38+	24	32+	25	40+	29	46+
	Total	111		85		74		63		63	
Middle Privilege											
	No Remission	173	87	96	71	94	78	77	73	67	69
	Remission	26	13	39	29	27	22	29	27	30	31
	Total	199		135		121		106		97	
Lower Privilege											
	No Remission	85	91	60	85	51	82	43	83	39	87
	Remission	8	9*	11	15*	11	18*	9	17*	6	13*
	Total	93		71		62		52		45	
RAISE Study											
	No Remission	353	88	209	72	195	76	157	72	140	68
	Remission	50	12	82	28	62	24	62	28	65	32
	Total Participants	403		291		257		219		205	

+ indicates the highest percentage of participants in Remission and * indicates the lowest percentage of participants in Remission for each study visit

Quality of Life by Privilege Group. Quality of Life improved for participants in all privilege groups, as well as the total population over the two-year period as seen in Table 10. Participants in the higher privilege group reported substantially better Quality of Life than the middle or lower privileged groups at all visits (Table 10) and were the most improved, with an increase of 15.75 points over the two-year period. The higher privilege group also had higher scores than the total study population at all visits. Over the two-year period, mean scores for the middle privilege group were lower than the higher privilege group and similar to the mean scores of the lower privilege group and the total population, except at baseline. Though both the middle and lower privilege groups improved, the middle privilege group improved slightly more over the two-year period with an 11.92-point gain, compared to the lower privilege group which only improved by 9.26 points. These gains appear to have been made at the early visits, as scores for the middle and lower privilege groups were within a few decimals of one another at the 12-month, 18-month and 24-month visit (Table 10).

Table 10

Mean Quality of Life Scores by Privilege Level and Visit

Privilege Group	Baseline			6 Months			12 Months			18 Months			24 Months		
	n	Mean	SD	n	Mean	SD	n	Mean	SD	n	Mean	SD	n	Mean	SD
Higher Privilege (n = 111)	111	63.81+	16.47	86	73.81+	20.45	74	75.2+	18.91	62	75.66+	19.52	63	79.56+	20.38
Middle Privilege (n = 199)	199	56.00*	17.21	135	64.09	19.73	121	63.42*	19.79	106	65.37*	21.84	97	67.92*	21.33
Lower Privilege n = 94)	93	58.38	16.17	71	60.9*	16.38	62	64.95	16.7	52	66.02	17.8	45	67.64	17.66
RAISE Study (n = 404)	403	58.65	17.04	291	66.15	19.79	257	67.18	19.45	220	68.42	20.72	205	71.43	20.91

Clinical Global Functioning by Privilege Group. Participants in the high privilege group also fared better in terms of Clinical Global Functioning as measured by the CGI, as can be seen in Table 11. Across all visits, the higher privilege group reported lower CGI scores than did the middle or lower privilege groups and received the most gains over the two-year period, with a decrease of 0.9 points. Over the two-year period, the higher privilege group also reported better Clinical Global Functioning than the total study population. Though mean scores were relatively similar, the total population performed slightly better than the middle privilege group at all visits. The lower privilege group had the highest CGI scores across all visits except baseline. This group improved the least, with a decrease of -0.36 points, compared to the middle privilege group (-0.74 points) and the higher privilege group (-0.9 points) (Table 11).

Table 11

Mean CGI Scores by Privilege Level and Visit

Privilege Group	Baseline			6 Months			12 Months			18 Months			24 Months		
	n	Mean	SD	n	Mean	SD	n	Mean	SD	n	Mean	SD	n	Mean	SD
Higher Privilege	111	3.92*	0.81	85	3.18*	0.99	74	3.32*	1.01	63	3.3*	1.03	63	3.02*	1.02
Middle Privilege	199	4.11+	0.86	135	3.59	0.95	121	3.5	0.82	106	3.48	1.08	98	3.37	0.97
Lower Privilege	93	4.09	0.73	71	3.76+	0.93	62	3.65+	0.85	52	3.87+	0.91	45	3.73+	0.78
RAISE Study	403	4.05	0.82	291	3.51	0.98	257	3.48	0.89	221	3.52	1.04	206	3.34	0.98

Multilevel Modeling

I performed multilevel modeling with and without the covariates to answer the study's primary questions. Remission was included as a dichotomous variable and QoL and CGI were continuous variables. Results for Remission were therefore reported as odds ratios and confidence intervals, while Quality of Life and Clinical Global Functioning findings were reported as path coefficients and corresponding errors. I have also included effect sizes for all primary outcomes. After fitting the unconditional growth model, I added privilege and the interaction between time and privilege as predictors. For the multilevel models with covariates, I first fit a model with marital status at baseline, diagnosis at baseline, and experimental condition as covariates (each using orthogonal contrast coding), and then added privilege and the Time x Privilege interactions as predictors. Results without covariates are discussed first.

Remission. For Remission, the intraclass correlation coefficient (ICC) was 0.39, indicating that 39% of the variance in Remission status was at the person-level (i.e., level-2) (Table 12). The unconditional growth model showed a significant effect of time, OR = 1.94, 95% CI [1.55, 2.43], $p < .001$, meaning that, on average, participants in this sample increased in their likelihood of Remission across time (see Table 12). As shown in Table 9, 12% of the participants were in Remission at baseline compared to 32% at 24 months. This effect is also illustrated in Figure 6. Building on this model, the inclusion of Privilege (two orthogonal contrasts) and the Privilege x Time interaction significantly improved model fit, $\chi^2(4) = 19.60$, $p < .001$ (Table 12). The higher versus lower and middle privilege comparison was marginally significant, OR = 1.46, 95% CI [0.93, 2.27], $p = .091$, as was the interaction between Time and the higher versus lower and middle privilege groups, OR = 1.35, 95% CI [0.97, 1.88], $p = .068$. The level-2 pseudo-R^2 value was 0.10, indicating that 10% of the person-level variance in Remission was explained by Privilege (Table 12). These findings indicate that the higher privilege group had a slightly higher

likelihood of Remission (14%) at baseline compared to the middle (13%) and lower privilege groups (9%) (Table 9).

Quality of Life. For Quality of Life, the ICC was 0.58, indicating that 58% of the variance in QoL was at the person-level (Table 12). The unconditional growth model showed a significant effect of time, $B = 5.50$ [0.49], $p < .001$, suggesting an average increase in 5.50 points each year (see Table 12). Building on this model, the inclusion of Privilege and the Privilege x Time interaction significantly improved model fit, $\chi^2(4) = 26.90$, $p < .001$. The only significant predictor was the higher versus lower and middle privilege comparison, $B = 5.45$ [1.32], $p < .001$. This indicates that at baseline, and across the duration of the study, the higher privilege group reported greater Quality of Life than the lower and middle privilege groups (see Figure 7). The level-2 pseudo-R^2 value was 0.08, indicating that 8% of the person-level variance in Quality of Life was explained by Privilege.

Clinical Global Functioning. The ICC for Clinical Global Functioning was 0.37 signifying that 37% of the variance in Clinical Global Functioning was at the person-level. Time was a significant effect in the unconditional model, -0.31 [0.03], $p < .001$, specifying an overall average decrease of 0.31 points each year (Table 12). The inclusion of Privilege and the Privilege x Time interaction into the model significantly improved the model fit, $\chi^2(4) = 21.9$, $p < .001$. The higher versus lower and middle privilege group comparison was significant, $B = -0.17$ [0.06], $p < .001$. This shows that the higher privilege group had lower Clinical Global Functioning scores at baseline and over the two-year study period (see Figure 8). Over the two-year study period, the middle privilege group improved more quickly than did the lower privilege group, $B = 0.08$ [0.04], $p < .031$. The pseudo-R^2 value at level-2 was 0.07, which

suggests that 7% of the person-level variance in Clinical Global Functioning was explained by Privilege.

Table 12

Results of Multilevel Models for Outcomes by Time and Privilege Class

	Clinical Global Functioning		Quality of Life		[a] Remission (PANSS Criteria)	
Intercept	3.91 [0.04]***	3.90 [0.04]***	60.21 [0.89]***	60.82 [0.91]***	0.10 [0.07, 0.14]***	0.10 [0.07, 0.14]***
Time	-0.31 [0.03]***	-0.29 [0.03]***	5.50 [0.49]***	5.49 [0.51]***	1.94 [1.55, 2.43]***	1.88 [1.47, 2.41]***
Privilege (Contrast 1)		-0.17 [0.06]**		5.45 [1.32]***		1.46 [0.93, 2.27]†
Privilege (Contrast 2)		0.00 [0.05]		0.56 [1.09]		0.75 [0.51, 1.12]
Privilege x Time (Contrast 1)		-0.06 [0.04]		0.74 [0.73]		1.35 [0.97, 1.88]†
Privilege x Time (Contrast 2)		0.08 [0.04]*		-0.11 [0.62]		0.94 [0.69, 1.27]
Simple Effects						
Higher Privilege						
Intercept		3.73 [0.08]***		66.27 [1.67]***		0.13 [0.06, 0.25]***
Time		-0.35 [0.06]***		6.21 [0.89]***		2.67 [1.74, 4.08]***
Middle Privilege						
Intercept		3.97 [0.06]***		57.53 [1.30]***		0.11 [0.07, 0.19]***
Time		-0.34 [0.04]***		5.21 [0.70]***		1.71 [1.25, 2.34]***
Lower Privilege						
Intercept		3.98 [0.08]***		58.65 [1.56]***		0.08 [0.04, 0.16]***
Time		-0.17 [0.06]**		4.99 [1.04]***		1.45 [0.87, 2.44]***
χ^2 model comparison (*df*)	21.9 (4)***		26.9(4)***		19.6 (4)***	
Variance Components						
Level-1	0.53	0.53	144	144	3.29	3.29
Level-2	0.34	0.32	218	201	2.43	2.19
ICC	0.39		0.58		0.37	
Explained Variance						
Level-2 Pseudo R^2	0.07		0.08		0.10	

Notes. Unstandardized coefficients and standard errors reported for Clinical Global Functioning and Quality of Life, and Odds Ratios with 95% confidence intervals were reported for Remission. Time is centered at baseline (0) and coded in years. For privilege, contrast 1 compares the higher privilege group (+1) to the two lower privilege groups (-1), and contrast 2 compares the middle privilege group (+1) to the lower privilege group (-1). ICC = Intraclass Correlation Coefficient. Level-2 pseudo-R^2 values represent the proportional reduction in level-2 variance by adding privilege and the interaction with time as predictors. $p < .10$ †, $p < .05$ *, $p < .01$ **, $p < .001$ ***

[a] Remission was coded 0 (not in Remission) or 1 (in Remission) so generalized linear models were used to account for the dichotomous outcome, the level-1 (residual) variance for these models is always defined as $\pi^2/3$. Coefficients for these models were presented as log-odds, with the corresponding confidence intervals.

Figure 6. Probability of Remission Across Follow-Up Visits by Privilege

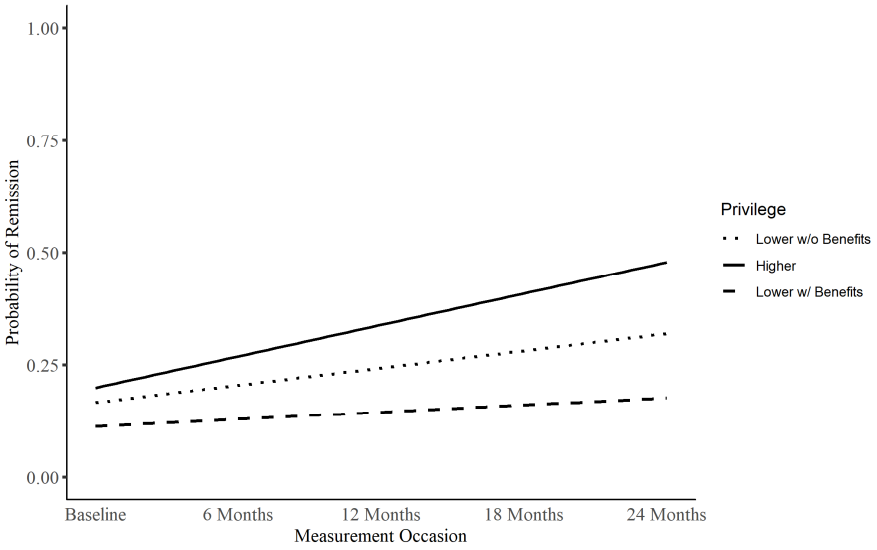


Figure 7. Quality of Life Across Follow-Up Visits by Privilege Group

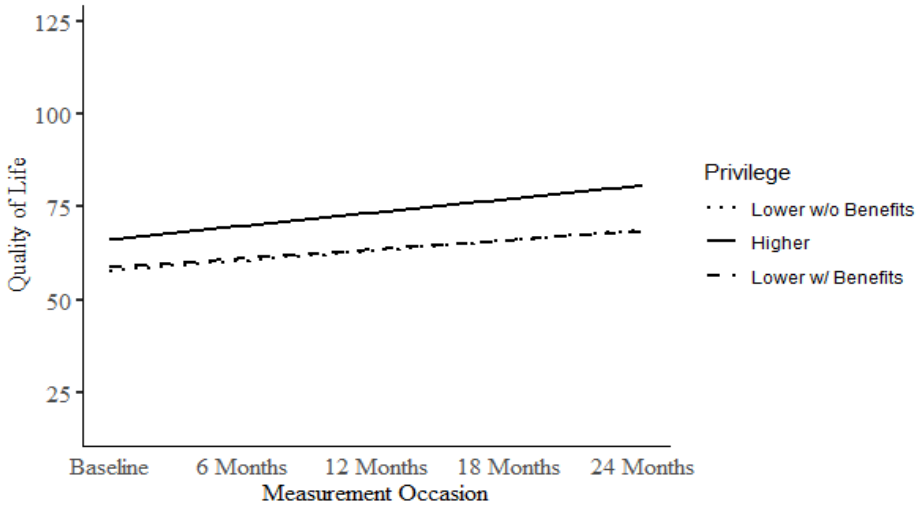
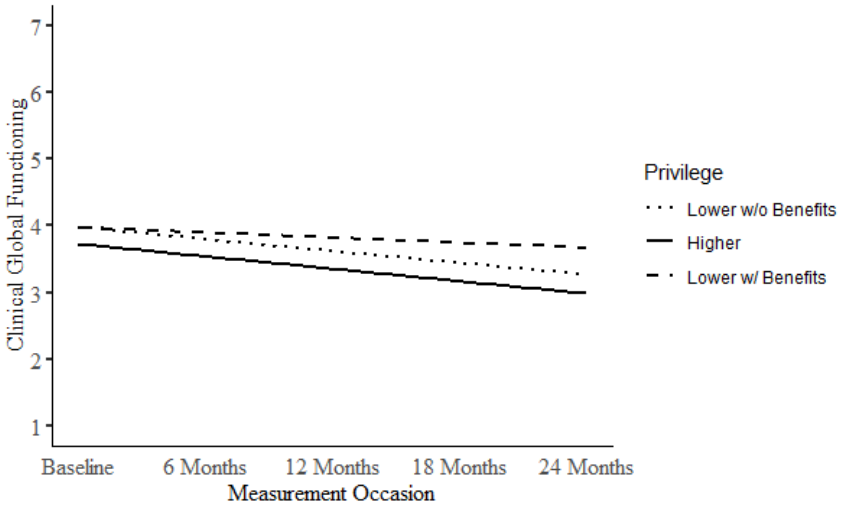


Figure 8. Clinical Global Functioning Across Follow-Up Visits by Privilege Group



Multilevel Modeling Analysis with Covariates

Remission with Covariates. There were no significant effects of any covariates on average, but there was a significant interaction between Time and Diagnosis (Contrast 2), indicating that those with schizophrenia had a significantly lower likelihood of achieving Remission than those with schizoaffective or schizophreniform disorders, OR = 0.57 [0.42, 0.79], $p < .001$. There was also a marginally significant, but potentially meaningful interaction between Privilege and Time, which indicated that the higher privilege group has a higher likelihood of achieving Remission over the two-year period, 1.34 [0.96, 1.86], $p < .076$. There were no other significant interactions.

Quality of Life with Covariates. There were no significant differences between any groups on average, but there were several significant interactions. First, there was a marginally significant, but potentially meaningful interaction between Time and Treatment Condition, which indicated that those in the experimental condition increased in their Quality of Life scores faster than did those in the control group, $B = -0.84$ [0.50], $p = .096$. For marital status, those who had been divorced, widowed, separated, or never married increased in their Quality of Life scores faster than those who were married at baseline, $B = -2.42$ [1.39], $p = .081$, though the effect was only marginally significant. Likewise, this rate of growth was faster for participants who had never been married than those who were divorced, widowed, or separated, $B = 2.64$, [1.02], $p = .01$. There was also a significant Time by Diagnosis interaction, that showed significantly faster increases in Quality of Life for those with a schizoaffective or schizophreniform diagnosis compared to those with a schizophrenia diagnosis, $B = -2.54$, [0.71], $p < .001$. This is in keeping with the literature, as schizophrenia outcomes tend to be poorer than those for other psychotic disorders (Harrow, Grossman, Herbener, & Davies, 2000). Adding Privilege and the Time by Privilege interactions to the model fit significantly improved model

fit, $\chi^2(4) = 27.1$, $p < .001$. As described previously, the higher privilege group reported greater Quality of Life scores across the study than the lower privilege groups, $B = 5.56$ [1.30], $p < .001$. Thus, this effect was maintained in the presence of these covariates.

Clinical Global Functioning with Covariates. Though there were no significant differences between the groups on average, there was a difference in the schizophrenia group compared to the schizoaffective and schizophreniform groups, $B = 0.17$ [0.06], $p = .004$, indicating that those diagnosed with schizophrenia had significantly higher CGI scores. Treatment type was marginally significant, as CGI scores for those who participated in the experimental condition, NAVIGATE, were lower than those in the other group ($p < .09$). As indicated by a marginally significant interaction between Time and Diagnosis, $B = 0.12$ [0.05], $p = .09$, CGI scores for those diagnosed with schizoaffective disorders decreased more slowly than those diagnosed with schizophreniform disorder. Adding Privilege and the Time by Privilege interactions to the model significantly improved model fit, $\chi^2(4) = 17.6$, $p < .01$. Like the model without covariates, the higher privilege group had significantly
better Clinical Global Functioning across the study when compared with the lower privilege groups, $B = -0.17$ [0.06], $p = .005$, indicating the effect maintained statistical significance in the presence of the covariates.

Table 13

Results of Multilevel Models for Outcomes by Time and Privilege Class with Covariates

	Clinical Global Functioning		Quality of Life		[a] Remission (PANSS Criteria)	
Intercept	3.81 [0.10]***	3.79 [0.09]***	61.75 [1.88]***	62.64 [1.86]***	0.12 [0.07, 0.23]***	0.81 [0.44, 1.50]***
Time	-0.36 [0.09]***	-.35 [0.06]***	7.67 [1.02]***	7.79 [1.03]***	2.53 [1.61, 3.97]***	2.63 [1.66, 4.16]***
Privilege (Contrast 1)		-0.17 [0.06]**		5.56 [1.30]***		1.38 [0.91, 2.10]
Privilege (Contrast 2)		-0.01 [0.05]		0.76 [1.09]		0.79 [0.54, 1.16]
Treatment	-0.06 [0.04]	-0.07 [0.04]†	0.79 [0.88]	1.18 [0.87]	0.90 [0.68, 1.20]	0.90 [0.68, 1.21]
Marital Status (Contrast 1)	0.13 [0.13]	0.13 [0.12]	2.72 [2.71]	2.68 [2.63]	1.24 [0.53, 2.89]	1.24 [0.54, 2.87]
Marital Status (Contrast 2)	-0.08 [0.09]	-0.09 [0.09]	-0.23 [1.94]	0.02 [1.89]	0.90 [0.47, 1.70]	0.92 [0.49, 1.73]
Diagnosis (Contrast 1)	0.04 [0.10]	0.03 [0.10]	-0.82 [2.19]	-0.82 [2.15]	0.79 [0.40, 1.54]	0.84 [0.43, 1.63]
Diagnosis (Contrast 2)	0.17 [0.06]**	0.17 [0.06]**	-0.84 [1.27]	-0.79 [1.24]	0.89 [0.59, 1.33]	0.89 [0.60, 1.34]
Diagnosis (Contrast 3)	0.12 [0.07]†	0.11 [.07]†	-1.48 [1.46]	-1.47 [1.43]	0.73 [0.46, 1.16]	0.76 [0.48, 1.20]
Privilege x Time (Contrast 1)		-0.04 [0.04]		0.51 [0.74]		1.34 [0.96, 1.86]†
Privilege x Time (Contrast 2)		0.06 [0.04]†		-0.13 [0.64]		0.95 [0.70, 1.28]
Time x Treatment	0.02 [0.03]	0.02 [0.03]	-0.84 [0.50]†	-0.75 [0.51]	1.14 [0.91, 1.42]	1.17 [0.94, 1.47]
Time x Marital Status (Contrast 1)	-0.06 [0.08]	-0.05 [0.08]	-2.42 [1.39]†	-2.50 [1.38]†	0.70 [0.38, 1.30]	0.68 [0.37, 1.27]
Time x Marital status (Contrast 2)	0.01 [0.06]	-0.01 [0.06]	2.64 [1.02]**	2.86 [1.03]**	1.33 [0.84, 2.11]	1.46 [0.91, 2.33]
Time x Diagnosis (Contrast 1)	0.08 [0.08]	0.06 [0.08]	-1.38 [1.27]	-1.28 [1.27]	0.83 [0.49, 1.40]	0.86 [0.51, 1.47
Time x Diagnosis (Contrast 2)	0.06 [0.04]	0.07 [0.04]	-2.54 [0.71]***	-2.52 [0.71]***	0.57 [0.42, 0.79]***	0.57 [0.42, 0.79]***
Time x Diagnosis (Contrast 3)	0.14 [0.05]**	0.12 [0.05]*	-0.97 [0.80]	-0.87 [0.81]	0.83 [0.59, 1.17]	0.87 [0.62, 1.23]
Simple Effects						
Diagnosis						
Schizophrenia						
Intercept		4.01 [0.05]***		59.61 [1.13]***		0.08 [0.05, 0.15]***
Time		-0.26 [0.04]***		3.92 [0.67]***		1.31 [0.94, 1.82]
Schizoaffective						
Intercept		3.89 [0.09]***		59.48 [1.96]***		0.06 [0.02, 0.17]***
Time		-0.22 [0.06]***		6.14 [1.04]***		2.45 [1.42, 4.23]***
Schizophreniform						
Intercept		3.67 [0.10]***		62.15 [2.28]***		0.21 [0.11, 0.39]***
Time		-0.49 [0.07]***		8.31 [1.21]***		2.85 [1.77, 4.58]***

Brief PD/PD NOS						
Intercept		3.80 [0.16]***		61.48 [3.23]***		0.18 [0.07, 0.43]***
Time		-0.42 [0.11]***		7.46 [1.56]***		2.58 [1.32, 5.02]**
Treatment Condition						
Experimental Treatment						
Intercept				59.61 [1.24]***		
Time				6.28 [0.65]***		
Community Care as Usual						
Intercept				60.98 [1.27]***		
Time				4.29 [0.73]***		
Baseline Marital Status						
Never married						
Intercept				60.03 [0.96]***		
Time				5.33 [0.52]***		
Presently Married						
Intercept				63.75 [3.31]***		
Time				4.14 [1.83]*		
Divorced/Widowed/Separated						
Intercept				59.45 [3.07]***		
Time				8.56 [2.05]***		
χ2 model Comparison (*df*)		17.6 (4)**		27.1 (4)***		16.6 (4)**
Variance Components						
Level -1	0.53	0.53	144	144	3.29	3.29
Level-2	0.29	0.27	218	201	1.90	1.74
Explained Variance						
Level-2 Pseudo R^2		0.07		0.08		0.08

Notes. Unstandardized coefficients and standard errors reported for Clinical Global Functioning and Quality of Life, and Odds Ratios with 95% confidence intervals are reported for Remission. Time is centered at baseline (0), and coded in years. For privilege, contrast 1 compares the higher privilege group (+1) to the two lower privilege groups (-1), and contrast 2 compares the middle privilege group (+1) to the lower privilege group (-1). Treatment is coded as Experimental Treatment = -1 and Community Care as Usual = +1. For Marital Status, contrast 1 compares those who were presently married (+1) to those who were divorced, widowed, separated, or never married (-1), and contrast 2 compares those who were never married (+1) to those who were divorced, widowed, or separated. For diagnosis, contrast 1 compares those with a schizophrenia, schizoaffective, or schizophreniform diagnosis (+1) to those with a diagnosis of brief psychiatric disorder or psychiatric disorder not otherwise specified (-1). Contrast 2 for Diagnosis compares those with a schizophrenia

diagnosis (+1) to those with schizoaffective or schizophreniform diagnoses (-1), and contrast 3 compares those with a schizoaffective diagnosis (+1) to those with a schizophreniform diagnosis (-1). Level-2 pseudo-R^2 values represent the proportional reduction in level-2 variance by adding privilege and the interaction with time as predictors. $p < .10$ †, $p < .05$ *, $p < .01$ **, $p < .001$ ***

[a] Remission was coded 0 (not in Remission) or 1 (in Remission) so generalized linear models were used to account for the dichotomous outcome, the level-1 (residual) variance for these models is always defined as $\pi^2/3$. Coefficients for these models are presented as log-odds, with the corresponding confidence intervals.

Coupled Changes in Dependent Variables Over Time.

Finally, I examined how Remission, Quality of Life, and Clinical Global Functioning changed together across time. Specifically, I fit multilevel models with each of these variables as a predictor of another (see Table 14). Time was included as a predictor in each model, and each independent variable of interest was person-mean-centered to ensure I modeled only within-person changes across time (and not between-person differences in each variable). Also, I report level-1 pseudo-R^2 values, since I am interested in changes in within-person (i.e., level-1) variance.

First, I fit a model with Clinical Global Functioning as the outcome, and both Remission (person-mean-centered) and Time as predictors. This model provided a significantly better fit than a model with only Time as a predictor, $\chi^2(1) = 143$, $p < .001$, and showed a negative relationship between Remission likelihood and Clinical Global Functioning, $B = -0.75$ [0.06], $p < .001$. This indicates that, at a given time point, when the likelihood of Remission was higher, scores on the measure of Clinical Global Functioning were lower. The level-1 pseudo-R^2 was 0.14, indicating that Remission status accounted for 14% of the within-person variance in Clinical Global Functioning.

Next, I fit another model with Clinical Global Functioning as the outcome, and both Quality of Life (person-mean-centered) and Time as predictors. This model provided a significantly better fit than a model with only Time as a predictor, $\chi^2(1) = 197$, $p < .001$, and showed a negative relationship between Quality of Life and Clinical Global Functioning, $B = -0.03$ [0.002], $p < .001$. In other words, at a given time point, when Quality of Life scores were higher, Clinical Global Functioning scores were lower. The level-1 pseudo-R^2 was 0.18, indicating that Quality of Life scores accounted for 18% of the within-person variance in Clinical Global Functioning.

Finally, I fit a model with Quality of Life as the outcome, and both Remission (person-mean-centered) and Time as predictors. This model provided a significantly better fit than a model with only Time as a predictor, $\chi^2(1) = 115$, $p < .001$, and showed a positive relationship between Remission and Quality of Life, $B = 11.07$ [1.00], $p < .001$. This shows that, at a given time point, Quality of Life scores were higher when participants were in Remission. The level-1 pseudo-R^2 was 0.11, indicating that Remission status accounted for 11% of the within-person variance in Quality of Life scores.

Table 14

Results from Multilevel Models of Coupled Changes in Clinical Global Functioning, Quality of Life, and Remission

	Clinical Global Functioning			*Quality of Life*	
Intercept	3.91 [0.04]***	3.87 [0.04]***	3.82 [0.04]***	60.21 [0.90]***	60.82 [0.89]***
Time	-0.31 [0.03]***	-0.25 [0.03]***	-0.18 [0.03]***	5.50 [0.49]***	4.60 [0.47]***
Remission		-0.75 [0.06]***			11.07 [1.00]***
Quality of Life			-0.03 [0.002]***		
χ^2 model comparison (*df*)		143(1)***	197(1)***		115(1)***
Variance Components					
Level-1	0.53	0.46	0.44	144	128
Level-2	0.34	0.37	0.38	218	224
Explained Variance					
Level-1 Pseudo R^2		0.14	0.18		0.11

Notes. Unstandardized coefficients and standard errors reported. As predictors, Quality of Life and Remission are person-mean centered to reflect coupled changes over time. Level-1 pseudo-R^2 values represent the proportional reduction in level-1 variance by adding each predictor.

*p < .10 †, p < .05 *, p < .01 **, p < .001 ****

CHAPTER 5
DISCUSSION

Race, childhood socioeconomic status and current poverty can negatively impact functional and clinical characteristics related to recovery and remission in mental disorder (Karow, Wittmann, Schottle, Schafer & Lambert, 2014). Mental illness, minority race and low childhood socioeconomic status and current poverty have been independently associated with poorer educational and occupational outcomes, psychological distress and lowered quality of life (Bozick, Lauff, & Wirt, 2007; Dan, Kumar, Avasthi, & Grover, 2011; Duncan Ziol-Guest & Kalil, 2010; Mong & Roscigno, 2010; Rosenheck et al, 2006; U.S. Department of Education, 2014; Wagner Newman, Cameto, & Levine, 2005). Moreover, minority status, childhood poverty and current poverty can negatively impact mood and psychological assets, such as life satisfaction and optimism, hereby impacting overall symptomology (Boehm, Chen, Williams, Ryff, & Kubanksy, 2015). Though evidence exists for the impact of race, childhood SES and current poverty on people with mental disorders, no study to this point has tried to assess how these variables might interact over time among people with psychotic disorder attempting to recover.

This secondary analysis of the NIMH-sponsored RAISE study was conducted to begin to address the gaps in knowledge regarding the relationship between privilege and recovery efforts among people with psychosis. I hypothesized that after controlling for marriage, psychiatric diagnosis and treatment group, lower levels of privilege would be associated with fewer periods of remission and lower levels of quality of life and clinical global functioning and higher educational or occupation status, over the two-year study period. I could not test a third hypothesis, that people with lower levels of remission would spend less time in school or

working than those with higher levels, due to problems with how the data was collected and recorded in the RAISE database.

To test the hypotheses, I used multilevel modeling. First, I conducted a latent class analysis to determine an empirically justified number of privilege groups and group membership. My analysis indicated that three groups of lower, middle, and higher privilege, could be clearly identified. Once these were established and described, I conducted the multilevel modeling analysis, comparing the means and covariances of path models to establish outcome differences between the groups.

Summary of Study Results.

Remission. Once marital status, diagnosis and treatment type were added to the model, privilege did not significantly impact remission in schizophrenia or other psychotic disorders, even using the broader criteria for remission, contrary to my hypothesis. Though it may be meaningful that the higher privilege group retained higher rates of remission than the other two privilege groups even after the covariates were added, the results were not statistically significant at $p < .05$. Furthermore, though difference between the higher privilege group and the other privilege groups could be considered marginally significant with the covariates added ($p < .08$), I used the less restrictive "broad criteria" for the remission as set forth by Lally and colleagues (2017), as I was able to assess symptom reduction every 6 months but was unable to determine the duration of time spent in remission. This means that some of the subjects who were in remission probably did not meet criteria for the full six months.

Clinical Global Improvement. As hypothesized, people with highest privilege had better functioning with and without covariates ($p <.005$ and $p < .008$ respectively). The covariates were found to impact income this way: those in NAVIGATE had better functioning than those with usual community care, people diagnosed with schizophrenia had worse

functioning than people with other diagnoses, and functioning worsened more slowly in those with schizoaffective than schizophreniform disorder.

Quality of Life. As hypothesized, people with the highest privilege level had better quality of life with and without covariates over two years ($p < .001$ and $p < .001$ respectively). The covariates seemed to impact income this way: people in NAVIGATE had better quality of life and, contrary to the literature, so did never-married people; while married people compared to all other marital statuses gained more slowly in quality of life over the study. Finally, for the subjects diagnosed with schizoaffective or schizophreniform disorder quality of life worsened more slowly that those diagnosed with schizophrenia.

Effect Size. When used to look at predictors, effect sizes quantify "the proportion or percentage of variation in the response variable that can be accounted for by the predictor(s)," providing the reader with an easily understood interpretation of the effect of the predictor (Nakagawa & Cuthill, 2007, p. 597). In my study, after including the covariates in the models, 7% of variation in clinical global functioning, 8% of the variation in quality of life and 8% of the variation in remission are attributable to privilege. Though these effect sizes are considered small or modest, they help to better understand the complex interaction of social and clinical characteristics on treatment outcomes for those with first-episode psychotic disorder.

Study Limitations and Research Implications

Though the study results are significant for quality of life and clinical global functioning, there are multiple limitations to this study, primarily due to problematic data. The amount of missing data, the variables available to assess the outcomes, as well as the sociodemographic characteristics of the sample could skew the results of the present study. Additionally, while multilevel level modeling, a well-recognized statistical method for addressing large amounts of missing data was used, there are also limitations to this approach.

Missing Data and Data Quality. One of primary problems in longitudinal studies are higher rates of attrition (Cumming & Goldstien, 2016; Twisk & de Vente, 2002). Attrition can refer to the loss of subjects during a study, but can also refer to "any pattern of loss of individual records over time, including those cases where individuals may return to a study after missing measurement occasions," and as such missing data is treated the same as data that is missing due to attrition (Cumming & Goldstien, 2016, p. 53). In the RAISE study, even if a subject missed all but the first appointment, they were not dropped from the study due to the high dropout threshold the researchers set. While this may have been a good strategy for keeping subjects in the study, it did not address the primary problem associated with high attrition – high amounts of missing data.

According to a meta-analysis looking at attrition in intervention trials for schizophrenia, approximately 20% of people drop out of schizophrenia interventions studies, with a range of 4% -71% (Szymczynska, Walsh, Greenberg, & Priebe, 2017). Though high attrition is expected in longer-term studies of people with serious mental illness, at the final RAISE visit (24 months) over 50% of the data was missing for all the scales, including the PANSS, CGI and QLS (Kane et al, 2016). Though no standard has been set for acceptable drop-out rates, there is evidence that suggests attrition rates as low as 5% may introduce bias and validity is threated if the rate exceeds 20% (Polit & Hungler, 1995; Schulz & Grimes, 2002). Trial credibility may also be threatened by high dropout rates. Xia and colleagues (2009) conducted a survey study of patients, caregivers, statisticians and clinicians and outcomes indicated that results from pharmacological studies were considered less credible if attrition exceeded 25 – 30%, which means the RAISE data is likely problematic.

As discussed in the methods section, under the umbrella of multilevel modeling, maximum likelihood (ML) estimation was used to address the missing data. Considered one of the strongest statistical approaches, ML is also one of the most popular methods for imputing missing data (Von Hippel, 2012). However, results from my study are limited by the large proportion of missing data. Even using ML, trials missing a large percentage (>40%) of data from the primary variables under analysis are considered as hypothesis-generating, not confirmative (Jakobsen, Cluud, Wetterslev, & Winkel, 2017). With much data missing, bias can be introduced even with the best imputation methods. As such, further studies are needed to confirm the relationship between privilege and QoL and clinical global functioning, taking care to retain subjects as long as possible.

Additionally, grounded theory studies from the patient's perspective should be conducted to better understand how privilege and its individual components impacts individual variables associated with quality of life and clinical global functioning. For example, a qualitative inquiry could help further understanding on how privilege, or the lack thereof, impact socialization efforts, including motivation and the ability to participate financially. While qualitative inquiries will further knowledge of the relationship between privilege and recovery outcomes, findings could be used to inform more culturally relevant treatment approaches and help in the development of quality of life and clinical global functioning measures that also take into consideration the privilege level of the individual.

Though caution must be taken when viewing the results, we note that response patterns for the groups were mostly consistent throughout follow-up for all outcomes. Looking at Tables 9 through 11, more people in the highest privilege group were in remission and on average people in that group were functioning better than the other groups at all visits. Fewer people in

the lowest privilege group were in remission at almost all visits. The middle privilege group had the lowest mean QoL scores for all visits except 6 months, however, mean scores for the lower and middle groups are very similar to one another (Table 10). As such, and because outcomes in my inferential analysis of the outcomes reached some level of significance, further study of the impact of privilege on mental health outcomes is justified.

In addition to missing data, problems with data quality impacted my ability to assess my original research questions. While employment and school attendance were variables in RAISE, how these data were recorded made it unclear if subjects were not employed or attending school or if the data were missing. Despite employment's importance for understanding how privilege impacts recovery efforts, outcomes were not analyzed. Because employment and school are a criteria for traditional psychiatric recovery and predictors of psychiatric and psychological recovery (Liberman, Kopelowicz, Ventura, & Gutkind, 2002; Stuart, 2006), further evaluation of the relationship between privilege and employment/education outcomes in people with psychotic disorders is needed. Patients who have or are enrolled in such programs should be studied and longitudinal inquiries would be more informative.

Appropriateness of Indicator Variables for Privilege. Though I found variables to assess my research questions, RAISE was not intended to assess the impact of race, poverty or childhood SES on outcomes. Besides missing data, the variables used to measure privilege could be improved. The idea of privilege is a complex, not yet well understood concept, and includes a complex interaction of multiple sociodemographic characteristics above and beyond the conceptualization provided in this study (Hays, 2008)[15]. Concepts related to privilege have long

[15] Hays (2008) developed a comprehensive model of privilege that includes key variables that have been found to impact attitude and behavior in mental health studies: a) age; b) disability; c) religion; d) ethnicity/race; e) socioeconomic status; f) sexual orientation; g) indigenous heritage 7) national origin and 8) gender.

been studied by sociologists and psychologists (Fussel, 1989), but researchers have more often analyzed measures of socioeconomic status, such as income, education and occupation (Kerr et al, 2012). This is likely due to the lack of appropriate privilege measures.

While privilege measures have been developed, they are often related to the recognition of one's own privilege compared to others, as opposed to measuring how privileged one is (McIntosh, 1988; Pinterits, Poteat, & Spanierman, 2009), or fail to include important privilege characteristics, such as race (Rutter & Quinton, 1977). Moreover, all the instruments I was able to find were only tested for psychometric properties by the research teams that developed them (Kerr et al, 2012). Ideally, future scholarship should continue to explore the concept of privilege and seek to understand the complex intersectionality of individual sociodemographic characteristics of social status in order to develop more reliable and valid measures (Cole, 2009; Collins, 2000) so that we may better understand how complex "interlocking identities" influence outcomes in mental health recovery (Collins, 2000, p. 107).

Recommendations for Improving the Variable Privilege. In this study, privilege equals more than the sum of its parts, and as such, the relatively simplified measures of SES and poverty I used may not have adequately captured what I conceptualized as 'privilege'. In addition to the potential issues with the Hollingshead and the use of indirect measures of poverty (discussion on pp. 85 -91), I was also unable to evaluate social capital, which could provide information on the tangible and intangible resources available to the participants, regardless of reported SES and poverty levels. Though education and occupation are highly correlated with income, possessing prestige is not the equivalent of possessing economic resources, and as such, results may be skewed. It is possible that: a) subjects were incorrectly classified due to outdated or inappropriate classification of occupations via the Hollingshead Four Factor Index; b) subjects

were incorrectly classified as poor or not due to indirect measures of poverty; c) subjects categorized as having high childhood SES (measured using educational and occupational status) had little social capital; and d) the impact of low SES and/or poverty was mitigated by access to intangible resources including intellectual, social and cultural capital and vice versa.

To strengthen the current study, I would follow Krieger, Williams and Ross's (1997) approach and recommendations for measuring socioeconomic positioning, rather than socioeconomic status and poverty. Described by the authors as "diverse components of economic and social well-being", socioeconomic positioning is expressed in the "distributions of occupations, wealth, education and social status" (p. 346). In the literature, the term socioeconomic status can refer to either actual resource- or prestige-based characteristics, making it conceptually ambiguous. In response, Krieger and his colleagues (1997) developed the term 'social positioning' to differentiate from SES as their conceptualization includes both resource and prestige characteristics. Resource- based measures assess at actual resources, such as education, income and wealth, while assessments of prestige establish social stratification relative to the position of others (Krieger, William and Ross, 1997). Prestige- based measures are typically use occupational prestige indices to categorize individuals, such as the Hollingshead Four Factor Index of Social Status used in this study.

Krieger and colleagues (1997) also suggest that socioeconomic context – which includes socioeconomic positioning, as well as other sociodemographic characteristics related to socioeconomic positioning, such as race and gender – should be conceptualized and measured in regard to both level and time period. They explain that only including a simple measure, such as current individual income, is likely insufficient for explaining the how the intersection of social positioning and race impact health outcomes. Not only are income and poverty dynamic, rather

than static characteristics, but only assessing individual income leaves out the potentially important social positioning characteristics of the family and community (Krieger, William and Ross, 1997). For future studies I would measures of social positioning at the individual, family and community level, and where appropriate look at social positioning in childhood, as well as adulthood.

Measures at the individual level across the lifespan would be useful for assessing an individual's current socioeconomic positioning in relation to their family of origin, as well as tracking economic and social mobility throughout their lifetime. In addition to establishing an individual's childhood socioeconomic positioning and standard of living in childhood, household level measures can provide comparative information for the individual level data as well as information on access to resources and the standard of living of the family. Safety issues, as well as community hazards and resources can all be assessed using neighborhood level measures ((Krieger, William and Ross, 1997).

Socioeconomic positioning at the individual, family and neighborhood level can be evaluated using absolute and relative measures of poverty. Absolute poverty measures of poverty assess whether a household is above or below a minimum poverty level, such as the federal poverty threshold (FTP), and those who fall below the line are consider poor. Though absolute measures are commonly used in the research, especially in the U.S., they are also considered problematic as most standardized poverty thresholds used currently are outdated or inadequate (DeCerf, 2017; Deimer, Mistry, Wadswroth, Lopez & Reimers, 2013). Critics maintain that exclusion from everyday life due to economic deprivation means someone is poor, regardless of whether they fall below a standardized line). In contrast, relative poverty measures evaluate an individual's standard of living, relative to others in the same society, for example,

comparing the participants household income to the mean or median income (DeCerf, 2017; Deimer, Mistry, Wadswroth, Lopez & Reimers, 2013). These measures are also problematic, however, as it difficult to create an index or set a poverty line across varying income distributions in a given population. As such, Decerf (2016) recommends using a hybrid of the two; a relative poverty measure that also includes an appropriate index and poverty line that can be generated using isometric mapping of poverty levels.

Measures of social capital may also be a good option to include in the assessment of privilege. Unlike measures of poverty and SES which tend to focus on income, social capital measures assess individual access to resources and social network characteristics above and beyond one's financial status (Moore & Carpiano, 2019). They may provide a better assessment of potential support or risk and as such, they may form a more comprehensive measure of privilege when combined with other measures of social positioning. Measures of social capital are also problematic, however, as what constitutes social capital and how it should be measured are still debated. Researchers using social capital measures to explore privilege should then consider the different theoretical dimensions of social capital and seek to include as many psychometrically sound measures as would be appropriate to provide a richer, more significant analysis (Moore & Carpiano, 2019).

Privilege Group Membership. Though the higher privilege group clearly differentiates from the others by race (mostly White), childhood SES (mostly high SES) and current poverty (mostly privately insured and only a low percentage receive benefits) (Table 8), the difference between the middle and lower privilege groups were less clear (Table 8). When looking at model fit, the entropy value for three classes of privilege is

.61, which indicates that subjects were correctly classified only 61% of the time (Table 8). Though the entropy value for two classes indicated a better fit (.68), the choice was made to use three classes based on the other fit values as well as relevant conceptual differences between the two groups.

The rationale for discriminating between the middle and lower privilege groups was based on my assumption that those who obtained public insurance and benefits were most in need, as receipt of such services is based on poverty levels. Though my rationale for choosing the variables that comprise privilege is supported by the literature, as demonstrated by the lower entropy value, the measures used to capture current poverty did not clearly distinguish between the middle and lower privilege groups. This may be due in part the Great Recession of 2008, which still being felt during the 2010 to 2012 RAISE study enrollment period (U.S. Bureau of Labor Statistics, 2020).

Problems with how privilege was measured have likely impacted my study results. Though the higher price group is clearly differentiated from the other two groups and is conceptually accurate (white, high SES, low poverty), differences between the other privilege groups are less clear, likely due to the problems discussed with measurement above. This may explain why there are no significant differences in outcomes between the middle and lower privilege groups once the covariates are added to the models. Additionally, because poverty levels were based on insurance type and receipt of benefits, it is also possible that rather than assessing different levels of privilege, I am comparing those with higher privilege to those who receive benefits and to those who do not.

Despite this, the results are still important for generating hypotheses. Conceptually distinct from the other two groups, membership in the higher privilege group is congruent with my conceptualization of higher privilege. Though the other two groups were similar to one another on race, enough conceptually relevant differences with SES, insurance type and receipt of benefits justified two groups. Finally, membership in the higher privilege group in the two-class LCA was divided into higher privilege and everyone else, and as such, would not have answered the stated research question which asks if *lower* privilege impacts outcomes. I conceptualized the lower privilege group as comprised of primarily racial minorities with low childhood SES and currently living in poverty. Though the two-group solution had a relatively clear "higher" privilege group, the "lower" privilege group was simply everyone else, and therefore conceptually meaningless in terms of my hypothesis

Race, Childhood SES and Current Poverty as Individual Variables. While having a psychotic disorder does not mean one will be living in poverty, people with schizophrenia are disproportionately impacted (Cohen, 1993; Read, 2010). As Shadish and colleagues stated in a 1989 review of deinstitutionalization, "By any reasonable standard, the chronic mentally ill must rank as one of the most needy and disadvantaged groups in American society" (p. 335), and it can be easily argued that little has changed since this observation was made.

While the overall impact of privilege may be greater than the sum of its individual parts, there is little evidence linking childhood or current SES to course and outcome in psychotic disorder (Perese, 2007; Topor, Ljungqvist, & Strandberg, 2016). As such, while researchers should examine the interaction between privilege and mental illness, the variables that make up privilege should also be explored individually or in different combinations. For example,

because poverty is a persistent source of stress and can hinder treatment it may impact symptom reduction more so than childhood socioeconomic status (Kuruvilla & Jacob, 2007; Saxena, Thornicroft, Knapp & Whiteford, 2007). On the other hand, childhood socioeconomic status and race may play a larger role in psychological recovery as early experiences with discrimination and deprivation can impact attitudes, emotional functioning, and behaviors, well into adulthood (Mossakowski, 2008). Further research can clarify the distinctions between privilege variables and potentially provide valuable avenues for intervention.

Strengthening Outcome Variables. Though less problematic than the variables used to create privilege overall, the measures used for employment/educational status and quality of life in this study should be strengthened in future studies. Data for employment collected in RAISE did not differentiate between casual labor and regular employment, making it impossible to assess if people were gainfully employed. RAISE items provided information on the type of schooling obtained but it was unclear what differentiated full time from part time attendance. Future studies should develop appropriate, well defined measures that capture more clearly educational and occupational status.

In terms of quality of life, though the QLS is specific to schizophrenia, psychometrically tested and oft-used in schizophrenia treatment trials (Falissard, Sapin, Loze, Landsberg, & Hansen, 2015), it is clinician-rated (Heinrichs, Hanlon, & Carpenter, 1984). Subjective (patient-rated) and objective measures (clinician/assessor rated) of quality of life have consistently yielded important differences even in the same sample (Hayhurst, Massie, Dunn, Lewis & Drake, 2014). Multiple studies have noted that while depression and good insight predicted lowered QoL in patient-rated measures, this was not reflected in clinician-rated QoL (Bengtsson-Tops et al, 2005; Fitzgerald et al, 2001; Hayhurst, Massie, Dunn, Lewis & Drake, 2014;

Tomotake at al, 2006). Multiple studies have also shown that greater negative symptomology is predictive of lowered quality of life when rated by the assessor, but not when reported by the patient (Browne et al, 2000; Fitzgernald et al, 2003; Kusel et al, 2007; Narvaez, Twamly, McKibbin, Heaton & Patterson, 2008; Yamaauchi et al, 2008).

Therefore, study outcomes might have differed with a subjective measure of quality of life. For example, if a large portion of the high privilege group was depressed, subjective QoL may have been rated lower, and results may not have been significant. However, evidence also suggests that racial discrimination and poverty are related to emotional distress and depression (Brown et al, 2000; Galea et al, 2007; Heflin & Iceland, 2009; Hudson, Neighbors & Geronimus, 2015; Taylor & Turner, 2002). As such, researchers assessing how quality of life in people with mental illness is impacted by poverty or race should measure both subjective and objective QoL and consider including depression and negative symptoms as a possible control.

Sample Characteristics.

Diagnosis. Childhood SES and poverty measures are not typically collected during clinical trials or longer-term observational studies, and only the RAISE data set on people experiencing a first episode of psychosis, rather than chronic schizophrenia, included all variables needed. Consequently, remission was evaluated, rather than recovery, as I initially conceptualized. Though short and long outcomes can vary by patient, it appears that symptomatic improvement is strongest during first episode but diminishes as the number of episodes increases (Emsley, Oosthuizen, Koen, Neihaus & Martinez, 2013; Harrow & Jobe, 2013; Szymanski, Cannon, Gallacher, Erwin & Gur, 1996).

Though beyond the scope of this study to discuss in any detail, different theories as to why this effect occurs have been suggested, ranging from the normal progression of the disorder

to the adverse effects of the neuroleptics (Emsley, Oosthuizen, Koen, Neihaus & Martinez, 2013; Wunderink, Nieboer, Wiersma, Sytema, & Nienhuis, 2013). Regardless of why this occurs, evidence shows substantial symptomatic differences between first episode and chronic patients with schizophrenia, suggesting the need for separate inquiries.

Diagnostic issues may have also impacted my findings in other ways. While much research has been conducted assessing the diagnostic stability[16] in psychotic disorder, outcomes have been somewhat mixed as to which specific diagnoses were more problematic (Fusar-Poli et al, 2016). To address this, a meta-analytic review of diagnostic stability in first episode psychotic disorders (Fusar-Poli et al, 2016) was conducted, in which researchers assessed 42 independent articles, representing 45 independent samples, for a total of 14,484 first-episode patients. To be included in the meta-analysis, participants in the studies were initially diagnosed using either the DSM-IV (n = 10,510) or ICD-10 (n = 3,974) criteria at baseline and then re-diagnosed at a later follow-up (average of = 4.5 years).

Results indicated that while most patients had been correctly identified as having either a psychotic or an affective disorder, all psychotic disorders showed diagnostic instability (Fusar-Poli et al, 2016). The point estimate of diagnostic stability was relatively high for schizophrenia (0.90) and mood disorders with psychotic features, excluding bipolar disorder) (0.84). Though evidence exists regarding the low diagnostic stability of schizoaffective disorder (Kingston et al, 2019; Coryell, 2016)[17], researchers found it had moderate stability (0.72) along with delusional

[16] Diagnostic stability can be generally "defined as the degree to which a diagnosis is confirmed at subsequent assessments." (Kim, Woo, Chae & Bahk, 2011, p. 117).

[17] One problem, for example, is the significant symptomatic and clinical overlap between schizoaffective disorder and mood disorders with psychotic features (Kingston et al, 2019; Keller, Schatzberg & Maj, 2007). While some authors suggest that the differences between them indicate discrete diagnostic categories that just need to be refined (Keller, Schatzberg & Maj, 2007), others suggest that the categories:

> …do not reflect distinct entities but, rather, domains characterized by certain psychopathological dimensions, pathobiological processes, and functional characteristics, the boundaries of which are

disorder (0.59) and brief psychotic disorder (0.56) (Fusar-Poli et al, 2016). Not surprisingly, diagnostic stability was the lowest for psychosis not otherwise specified (NOS)(0.36) and schizophreniform disorders (.29), as these are diagnoses that are often holding places until more time has passed and more information becomes available. While the authors indicate that most "incorrect" non-schizophrenia diagnoses related to psychotic disorders were later changed to schizophrenia, only 0.05 of the initial cases changed from a psychotic disorder to a mood disorder (Fusar-Poli et al, 2016).

In the current study, 53% of participants were diagnosed with schizophrenia, 20% with schizoaffective disorder, 17% with schizophreniform disorder, and the rest were diagnosed with either brief psychotic disorder or psychotic disorder NOS. Though the RAISE researchers continued to track symptomology and other clinical characteristics throughout the study, diagnoses were not updated in the two-year period and consequently, it is likely some of the participants' diagnoses changed, especially the 26% diagnosed with schizophreniform, brief psychotic disorder or psychotic disorder NOS. This may be problematic, as discussed in the methods section above, as outcomes vary a great deal by the type of mental health diagnosis. To address potential changes to diagnoses, researchers should clearly track diagnostic changes over time as well as consider using the research domain criteria (RDoC) developed by NIMH to categorize participants, at least until more accurate criteria can be developed (Miller & Rockstroh, 2016).

Race. This study looked at the combined effects of race, childhood SES and current poverty on recovery outcomes, however, there were low numbers of minority participants and differential attrition for racial categories. While blacks comprised 34% of the study participants

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likely arbitrary and in continuity or intersection with other domains of mental illness, through to the limits of "normal" human experience and functioning. (Kingston, et al, p. 638)

and whites 43%, Hispanics (11%), mixed race (7%) and other were underrepresented (5%). Because different races and ethnicities have been shown to have diverse beliefs and experiences with mental illness (Shehadeh, Heim, Chowdhary, Meaker & Albanese, 2016; Ciftci, Jones, & Corrigan, 2013; Chu & Sue, 2011) efforts should be made to include adequate sample sizes of all racial categories of interest, or perhaps more appropriately, assess each racial category separately in future inquires.

In this study, those who only attended two or more visits included a larger percentage of White and Black participants, while Hispanics and mixed-race participants all attended three or more visits. If Whites had attended all visits, study outcomes for the higher privilege might have been higher, as the higher privilege group consistently had the better outcomes, even when the results were not statistically significant. Evidence indicates that Blacks may have poorer clinical outcomes than their White counterparts (Morgan et al, 2017). Consequently, if Blacks had attended all visits overall outcomes might have been worse and outcomes for the middle and lower privilege group may have more clearly differentiated from one another.

Though minority status has been long been associated with attrition in psychiatric studies, as are long-term clinical trials and male gender (Fischer, Dornelas, & Goethe, 2001), the missing data from the visits means attrition happened unequally and may have resulted in attrition bias. Bell, Kenward, Fairclough and Horton (2013) argue, however, that methods such as maximum likelihood estimation used in this analysis, can partly mitigate this bias. Hence, in addition to larger sample sizes of racial minorities, statistical approaches should be used to address potential attrition issues.

Gender. The RAISE data included all variables needed to test my hypothesis, but the gender characteristics of the sample may have also skewed or altered results. Despite efforts to

ensure the sample was representative of the larger population (Kane, 2015), 73% of the RAISE sample was male. This is concerning as epidemiological studies have found multiple differences between men and women in the presentation of schizophrenia (Ochoa, Usall, Cobo, Labad, & Kuklarni, 2012). Though inconclusive, there are multiple studies indicating that men may experience more severe negative symptoms than women and that women may experience more depression symptoms (Grossman, Harrow, Rosen, Faull & Straus, 2008). As discussed,, negative symptoms tend to be predictive of lowered QoL, as is depression (Hayhurst, Massie, Dunn, Lewis & Drake, 2014). Thus, it is possible that in the current study, quality of life might have been higher overall if rated using subjective measures and the sample included more women, though depression is also predictive of lowered QoL when rated subjectively.

Age of onset also differs by gender and men tend to experience onset between the ages of 18-25, while the onset for women is between the ages of 25-30 (Ochoa, Usall, Cobo, Labad, & Kuklarni, 2012). In a meta-analysis looking at age of onset and outcomes for schizophrenia, researchers found a small, but statistically significant correlation between a lower age of onset and higher negative symptoms, more hospitalizations, increased relapses, as well as poorer social functioning and global outcomes (Immonen, Jaaskelainen, Korpela & Miettunen, 2016). Consequently, if my study included more women, remission and clinical global functioning may have been higher overall for the entire sample. Thus, any study looking at outcomes in psychosis studies, should try to include equal percentages of male and female subjects so that results better reflect the population studied.

Premorbid functioning, which has been linked to prognosis, is also impacted by gender. Studies have consistently shown that men have poorer premorbid functioning than women in multiple domains. While better premorbid functioning in females could be related to a later age

of onset, prior to diagnosis, males showed more academic, occupational and social deficits (Leung & Chue, 2000; Ochoa, Usall, Cobo, Labad, & Kuklarni, 2012). Additionally, a small body of evidence shows males also have more cognitive issues than their female counterparts: males with schizophrenia tended to have more academic impairments, such a speech and reading problems, as well as lower IQ (Alward, Walker, & Bettes, 1984; Crowe, Done, & Sacker, 1995).

In addition to better premorbid functioning, women also have better short term (2-5 years) and mid-term (5-10) outcomes than men, though the effects tend to diminish over the long-term (Leung & Chue, 2000). Prognosis is better for females in terms of educational, occupation and social functioning, as well as shorter and fewer hospitalizations, less substance abuse issues, and less antisocial behaviors. Gender differences in functioning are likely related to age of onset, as onset for men may lead to earlier more serious disruptions in academic, occupational and social roles, limiting their ability to acquire needed skills, but men may also deteriorate more quickly than females after onset (Häfner et al, 1998). Because the sample in RAISE was predominantly men, if more women were included, all outcomes may have improved overall. When looking at privilege and recovery from psychosis, therefore, in addition to including equal numbers of men and women, researchers should also consider using gender as a control. Though males are considered more privileged than females overall, mental health gender related differences may be more influential.

Clinical Implications and Recommendations

In this study and in the RAISE study, people in the treatment arm of the study were more likely to be in remission than did those receiving usual community care. Though the results were only marginally significant in the current study, my results, coupled with the RAISE results, still suggests that remission in first-episode psychosis may be related, at least in part, to comprehensive, patient-driven mental health services, such as those provided in the experimental

arm of the RAISE study. In addition to providing individualized medication treatment, the RAISE study allowed study participants to choose what services they felt suited their needs best (Meuser et al, 2015).

Psychosocial components of the RAISE study included a family education program, resilience training and supported employment and education (Mueser et al, 2015). Each of these has been found to be effective for a variety of positive outcomes, including enhanced coping skills, improved functioning, and increased opportunities for completing school and finding competitive employment (Bozikas & Parlapani, 2016; Modoni et al, 2016), as well as increasing family knowledge and coping (Sin & Norman, 2013). Moreover, comprehensive or wraparound services have been found to be more effective for treating symptoms and improving overall functioning than medication on its own in first episode or early psychosis (Uzenoff et al, 2012). Evidence therefore suggests that patients first experiencing psychosis should be offered a variety of service choices in addition to, or possibly in lieu of, psychiatric medication treatment (Francey et al, 2020).

Though one of the aims of RAISE was to increase people's medication treatment compliance and their agreement with the illness concepts taught or discussed in NAVIGATE, the stated main goal of the study was to determine which treatment better helped with psychological recovery, specifically increasing quality of life (Kane et al, 2015). Mental health treatment centers that seek to improve “recovery in” schizophrenia should then provide psychosocial treatments for patients with psychotic disorder, including those included in the RAISE study (family services, resilience training and supported education and employment) (Mueser et al, 2015), rather than focusing solely on pharmacological interventions. Other types of services, such as support groups, social skills interventions, cognitive remediation therapy, and case

management have been found to improve functional outcomes, as well as overall quality of life (Chien, Leung, Yeung & Wong, 2013; Wojtalik & Eask, 2019). Case management may help with difficult to follow or treat cases, but may also help clinicians connect the people they are treating to services they need to help mitigate the effects of poverty, such as food stamps, housing, and public health care (Chien, Leung, Yeung & Wong, 2013), as clinical global functioning and quality of life appear to be impacted by privilege.

Though definitions remain conceptually vague (Beresford, 2015; Smith-Merry et al., 2011), psychological recovery, or "recovery in" mental illness, has been identified as the primary goal for mental health care by the Substance Abuse and Mental Health Services Administration (SAMHSA) (Substance Abuse and Mental Health Services Administration, 2012). Measures of psychological recovery have problems with reliability and accuracy, however[18](Shanks et al, 2013; Sklar, Groessl, O'Connell, Davidson, & Aarons, 2013), and quality of life measures may offer a more psychometrically sound way of assessing and understanding psychological recovery.

According to Lieberman and colleagues (2008), quality of life measures captures variables that are conceptually similar to those commonly captured in measures of "recovery in" mental illness. They may also better reflect the process of psychological recovery as it was described by those describing the process. Current conceptualizations of recovery have attempted to identify the phases or stages of psychological recovery, but current quantitative measures do not clearly discriminate between these stages (Andresen, Caputi & Oades, 2003).

[18] Of note, the measure for psychological recovery, the Mental Health Recovery Measure (MHRM)(Young & Bullock, 2003) used in the original RAISE study was not used in this study. Though there are psychometric data available for the original 30-item scale and a modified 10-item version, the RAISE researchers used a modified 15-item version that has no available information on its validity and reliability.

While symptoms of serious mental illness have been shown to negatively impact quality of life (Karow, Wittmann, Schottle, Schafer & Lambert, 2014; Rabinowitz, Berardo, Bugarski-Kirola, & Marder, 2013) results from this study indicate there may be other factors involved, including sociodemographic variables such as race and socioeconomic status. As such, when assessing first-episode patients it is important to gather a complete and detailed assessment of sociodemographic characteristics that could negatively impact quality of life, and possibly psychological recovery. More importantly, it is important to use this information to better inform treatment approaches.

Health models have consistently provided evidence that racism is a key factor underpinning health and mental health inequities (Williams & Mohammad, 2013). When speaking with patients of color, clinicians should directly inquire about cultural differences regarding attitudes about mental health and its treatment, as well as to explore experiences with health and mental health disparities. Concerns about receiving inadequate or culturally inappropriate care should be addressed directly with the patient, family and caregivers. Doing so may increase rapport and trust but could also help the clinician guide the client and family to culturally appropriate service choices. Evidence also indicates people of color, especially Blacks, are at greater risk for experiencing life stressors and adversity than their White counterparts as they are more likely to experience poverty, longer periods of unemployment, incarceration and homelessness (Utsey, Giesbrecht, Hook & Stanard, 2008). People of color are also more likely to live in high-crime communities and are less likely to have access to financial and social resources. Additionally, studies have clearly linked race-related stress to a variety of poor outcomes, including poor mental health functioning, decreased quality of life and lower levels of life satisfaction and self-esteem (Utsey, Giesbrecht, Hook & Stanard, 2008). Because these

outcomes are also associated with mental illness, care should be taken to assess and treat emotional distress associated with race and ethnicity, especially in conjunction with low SES.

When evaluating SES, clinicians should consider not only the current SES status of the client, but also that of the client's family, both current and in childhood. Doing so can help the clinician identify potential resources and support but may also help distinguish potential areas of economic need and emotional distress. Because deprivation can be a source of great stress and reduce quality of life, clients should be assessed to see if their basic needs are being met (such as food, clothing, and housing), as well as their health care needs (such as insurance, affordable care and transportation) (Perese, 2007; Wiersma, 2006). Case management or direct referrals to services should be offered to clients who need help meeting their basic necessities and the application processes should be monitored to make sure needed resources are obtained.

Serious mental illness can impact individual or family finances negatively, so counseling and services should be offered to individuals and families who have experienced economic downturns to help them adjust. Because people with schizophrenia can also have trouble with cognition, life skills programs may also be helpful. Though the evidence is still emerging, life skills course may help improve financial awareness, as well as communication, domestic and personal self-care, and community living skills (Tungpunkom, Maayan, and Soares-Weiser, 2014). Poverty also negatively impacts community integration and socialization, increasing the likelihood of social isolation, which in turn can negatively impact self-image and mood (Topor et al, 2014). As such, clinical opportunities for socialization, such as socialization groups or day centers, should be made available, and social activity with friends and family, as well as community integration should be encouraged.

Conclusion

In summary, people can and do recover from serious mental illness, though how and why are still not well understood. Over a two-year period among younger persons with psychosis, lower levels of privilege were positively associated with lower quality of life and clinical global functioning, however, the missing data limit the results to hypothesis generation. Because of unequal attrition in Blacks and Whites and too few women recruited, missing data might also obscure the effects of both race and gender on the observed outcomes, but results suggest that privilege may impact recovery efforts more than might be surmised from current treatment approaches that focus primarily on reducing symptoms. Treatment of individuals should be culturally appropriate and inquire about and address race and economic issues specifically. Researchers should develop better measures of privilege and of recovery along with seeing how privilege works over time and after early and later phases of the disorders. We should also look more closely at the effects of current and childhood socioeconomic status on recovery outcomes.

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